WAR MONTHLY

ISSUE 6

40p $1.50

AUSTRALIA $1* CANADA $1.50 N.Z. $1 S.AFRICA R1

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ISSUE 6

Subscription rates
For 12 months:

UK and Eire	£5.50
US and Canada	$18
Other countries	£7.50

These prices include packing and postage. Orders should be sent with payment to W. H. Smith & Son Ltd., Subscription Services, Vachel Road, Reading, Berks, RG1 1NZ, England, or to your local newsagent, or any branch of W. H. Smith & Son Ltd. Be sure to state from which number you wish your subscription to begin. Subscriptions will be sent by surface mail from England.

Back numbers
Back numbers of War Monthly are available from Department V, M/C Ltd., P.O. Box 80, Slough, SL3 8BN, England, for 40p per issue including postage.

Readers in the US and the British Commonwealth outside the UK should obtain back numbers through their regular magazine supplier.

Published by
Marshall Cavendish Ltd.,
58 Old Compton Street,
London, W1V 5PA, England.
Telephone 01-734-6710.
Telex 23880

Printed in Great Britain by
Severn Valley Press Ltd.,
Caerphilly, Glamorgan.

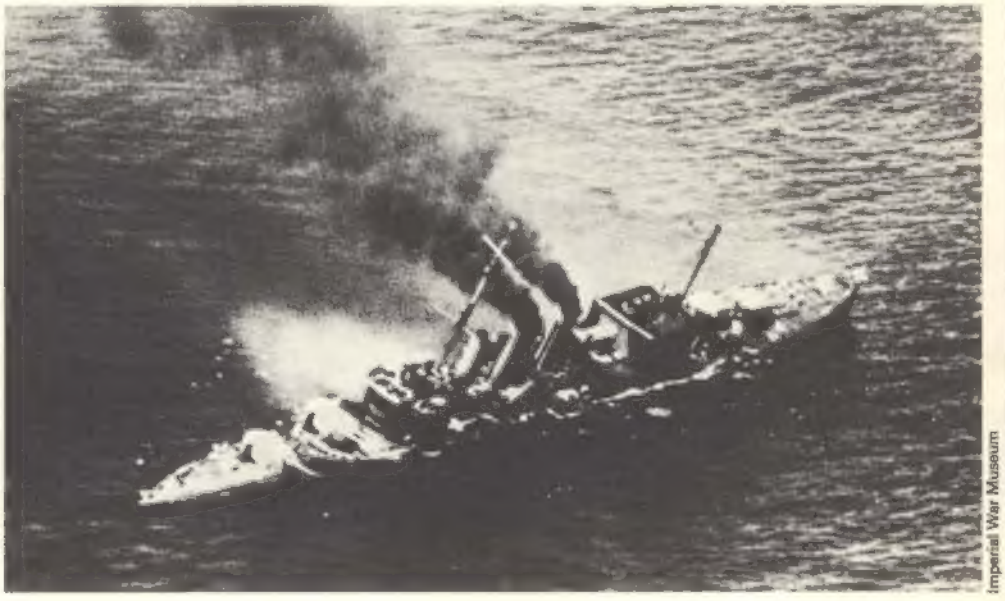
US and Canada on sale date:
September 1974

* Recommended retail price

Picture research undertaken by the Robert Hunt Library

Front Cover
Stuka! The very name breathes malevolence. Of all World War II dive-bombers, the Ju87 proved itself deadly and accurate in every theater. Our Front Cover illustrates just a few of the insignia used by Stuka units. L/h column: (top) 7th Gruppe Stukageschwader 1, (middle) 3.St.G.2, (lower) 4.St.G.2. R/h column: (top) 1.St.G.77, (middle) 1.St.G.2, (lower) 1.St.G.1.

CONTENTS



Imperial War Museum

HMS Cornwall, *a 10,000-ton RN heavy cruiser built in 1926, had the distinction of being the first ship to sink a disguised German raider, the* Pinguin, *killer of 28 ships—136,000 tons of Allied shipping. This was on 8 May 1941. Less than 11 months later, on Easter Sunday 1942,* Cornwall *herself felt the blast of enemy fire, being sent to the bottom of the Indian Ocean by dive-bombers of the Imperial Japanese carrier-borne force.* Cornwall*'s sister ship,* Dorsetshire, *was sunk in the same action.*

A 'WAR MONTHLY' reader, G. H. ('Stan') Twyman of Dartford, Kent, was on board Cornwall and was one of the 1,100 survivors of the action. He tells his story below.

"We left the port of Colombo at midnight on 4 April in the company of *HMS Dorsetshire*. Our task—to intercept a Japanese naval force. I was in charge of 'A' shell room. The first I knew of us being attacked was when the lights went out, and the ship started to list. I arrived on deck and saw the bodies of my mates. The ship was ablaze. The captain gave the order to "Abandon ship".

My ship *Cornwall* had been bombed 'by Japanese aircraft at 1400 on Easter Sunday. The first lifeboat I got in was sunk by a bomb which went right through it. Before they flew off, the Japanese aircraft machine-gunned us in the water. The ship went down by the bows after about 30 minutes (above). We were left alone in the water with one whaler and Carley floats—nearly 400 of us out of 700. We started singing and could also hear the *Dorsetshire* survivors singing. She had been sunk as well.

The weather was nice and calm, thank goodness. Some were swimming, holding on to wreckage. We kept splashing around to keep the sharks at bay. Several men were attacked by sharks and lost legs as a result of it. Some died of their injuries and were pushed over the side of the whaler to make room for others. On the evening of Easter Monday an aircraft flew over. At first we did not know if it was ours or theirs. Then it started signalling: "Keep your heads up. Assistance is coming later". About 1900 we sighted our rescue ship, *HMS Dispatch*, who picked up all the survivors they could find. We had been in the water for about 30 hours. *HMS Dispatch* took us back to Colombo where we were transferred to the battleship *HMS Resolution*. From here we were transferred to another ship that brought us home. This was the first time we had been home in three years."

RAIL GUNS

Weighing up to 1,000 tons, these monsters belched 7-ton shells over 20 miles. But as war winners they were non-starters

A mighty gun, sitting in French woodland near Soissons, bombarded Paris, 68 miles away, between March and August 1918. Twenty-three years later, in late 1941, shells dropped on Dover and Folkestone in Kent, blasted across the English Channel from Nazi Europe. These colossal weapons, capable of such long-range bombardments, were railway-guns, the monsters of world war artillery.

The railway-gun became a standard item of equipment during World War I. The reason was simple—there was no other way of making very heavy guns mobile. Though the Germans had built a 16in howitzer that could be moved by road, it travelled in five loads at 10 miles an hour and took almost a day to assemble when it arrived in position. With a maximum range of six miles, it was a weapon for dealing with specific stubborn obstacles—as the bombardment of the Liege forts in 1914 showed—and not really convenient for day-to-day gunnery. A gun was needed for more flexible applications; something with more range to cover a greater sector of the battlefield. Putting a heavy gun on to a road-mobile carriage was an extremely difficult proposition —hence the rise of the rail gun.

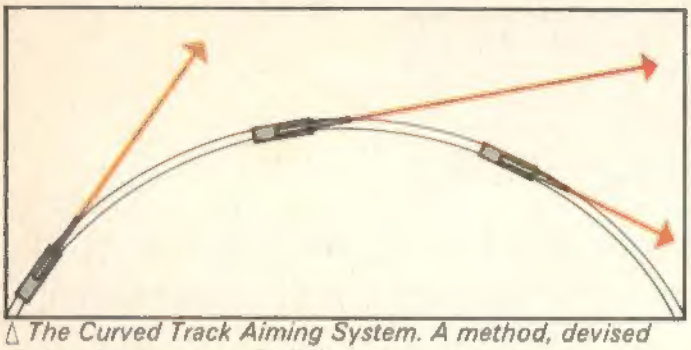
What is the difference between a gun and a howitzer? The howitzer uses a small propelling charge in a short barrel to toss a heavy shell for a short range at low velocity. The same calibre of gun has a much longer barrel, a more powerful propelling charge, and a lighter shell to achieve a much greater range at a much higher velocity.

The US Army's 12in howitzer on railway mounting, for example, fired a 1,046lb shell at 1,500ft-per-second (fps) to 9,250 yards, while the 12in railway-gun fired a 975lb shell at 2,275 fps to 30,000 yards. The barrel of the howitzer weighed 14½ tons and was 10ft long; the barrel of the gun weighed 58 tons and was 35ft long. Clearly the mounting which went under the gun needed to be considerably bigger, stronger and heavier than the howitzer mounting. It was obviously, then, impracticable to consider moving such a massive weapon by road.

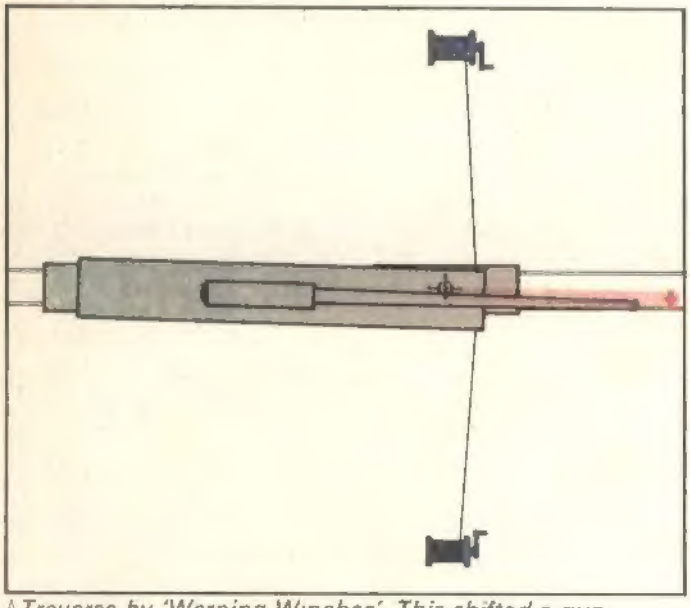
First to appreciate this was the French Army, whose 75mm

Easy does it! The German on the left is adjusting a screw-jack while others lever the bogies of a 28cm (11in) Bruno *L/40 rail-gun behind the Western Front in 1918. This gun, from a battleship's reserve stocks, fired a 529lb shell 18 miles.*

Bundesarchiv

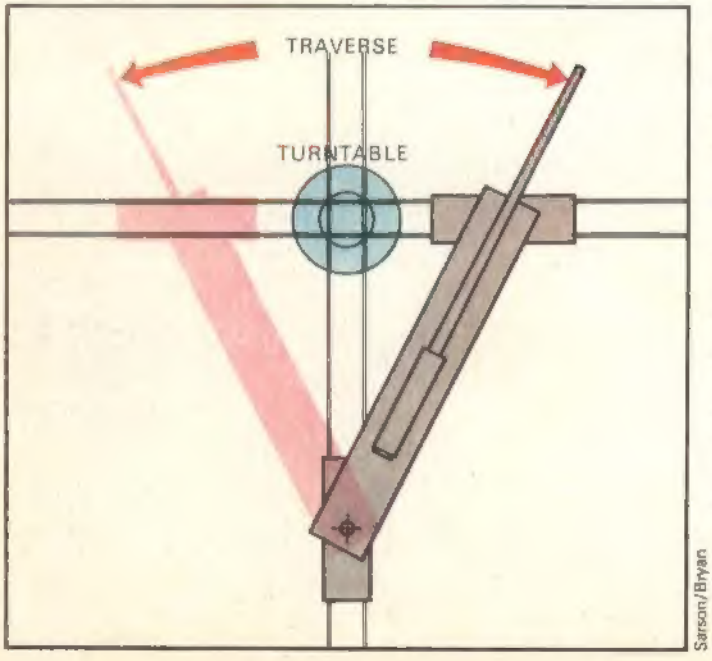


△ *The Curved Track Aiming System. A method, devised during the American Civil War, that entailed laying or finding a length of curved railway track to increase a gun's arc of fire. A 5½° traverse cost 88ft of track of 500ft radius.*



△ *Traverse by 'Warping Winches'. This shifted a gun-mounting one or two degrees across the bogies. On curved track it was enough to correct gun-laying without shunting*

▽ *Cross Track Traverse. An ingenious German way of getting a 120° arc of fire. A turntable allows the front bogie to run along a cross-track; gun rotates about the rear bogie.*



Sarson/Bryan

Field Gun, M1897, was one of the best light field-guns in the world in 1914, and they placed an immense reliance on it. Their pre-war strategic teaching was always based on attacking and developing a fast-moving mobile war. Heavy and ponderous artillery had no place in this concept, and the rapid fire of the 75 seemed perfectly adequate. There was no need for a massive gun firing a 1,000lb shell; four 75s firing sixteen 16lb shells each could drop the same weight of metal onto the enemy in less than a minute.

European warfare, by the end of 1914, was not mobile. This fact, coupled with shortage of ammunition for the 75, caused the French Army to reappraise its attitude towards the heavy gun. They considered—and decided to produce the gun. To do so as quickly as possible, they withdrew heavy guns and howitzers from coastal forts, land forts not involved in the war, reserve stocks, gunmakers' store-houses and Naval reserves.

Then the problem was how to mount the guns so that they could be taken to war—all they had was guns with barrels and breeches, and nothing underneath them. Schneider, the famous gunmaking company, designed a simple railway mounting consisting of two massive steel side-plates joined by cross-beams to make a box. The gun was dropped in, its trunnions sitting in strengthened bearings in the side-plates, and enough wheels were put underneath to take the weight. There was no complicated recoil system—there was no time to design one.

The guns were taken to their firing locations, a platform of timber was built beneath them between the rails, the gun was jacked down from its wheels and it was in position. When fired, the recoil drove straight into the side-plates and slid the whole assembly back along its timber platform for four or five feet. After half a dozen shots, the mounting was jacked back onto its wheels, trundled back into place, jacked down, and the whole performance began once more. It was primitive, but it worked.

From this crude beginning the railway gun evolved in a number of ways, since it promised to be the only viable system whereby heavy guns could be moved about the Western Front of World War I. As it evolved, it posed a few new problems. The first and most basic, was how to point it in the right direction. Anchoring a gun barrel into two side-plates meant that to traverse it—swing it from side to side to point it accurately at a target—the whole mounting had to be heaved about bodily. Since the whole assembly weighed 60 tons this was not an easy job. Fortunately the solution, developed when the first railway-guns were used in the American Civil War, was to hand—a stretch of curved track could be laid and the gun pushed along until the barrel swung round, into line with the target.

This solution worked but it was not a system capable of fine adjustment; much arm-waving between the gunlayer and the engine driver took place and a sprinkling of Gallic oaths were uttered before the gun was accurately pointed. A slightly better system was adopted by the British designers. They arranged the structure of the gun mounting so that it could be moved sideways across the top of the front bogie for a small distance. After moving up the curved track into rough alignment, two winches were laid out at the sides of the track and cables connected to the mounting. Heaving in on one winch and paying out on the other allowed the front end to be traversed one or two degrees, sufficient to point the gun accurately.

A better system, but only applicable to smaller weapons, was to put the gun on a turntable on top of what was

practically a standard railway flat wagon. It could then be pointed in any direction regardless of how the track ran. But there was a big drawback. To fire at a wide angle to the track the wagon had to be braced with spars and jacks to stop the whole assembly toppling over under the recoil force.

The development of railway-guns was then taken up by the Germans. Their notable innovation in the general field of railway artillery was the manufacture of a variety of turntables. The whole gun mounting could be run on to a turntable so that the gun could then be swivelled round in any direction to cover an enormous field of fire. Soon though, with the resources and inventiveness of the Krupp factory to call upon, they moved into an entirely new area of railway-gun development.

The Germans had mounted a number of ex-naval 38cm guns in turrets to protect the Belgian coast. They adapted one or two of these for use as long-range guns by putting them on railway mountings. They could pitch 1,650lb shells up to 16 miles range to spread alarm and despondency in the rear areas. Then, in 1918, using one of these 38cm guns as a basis, they produced the famous 'Paris Gun'. This was a 21cm gun with a barrel 112ft long, capable of sending a 264lb shell 76 miles, and which, between March and August 1918, dropped 303 shells on Paris. The railway-gun had moved out of the heavy tactical support role and entered the super-heavy long-range strategic area.

The problems which the Paris Gun brought into focus were unique. The first problem was range—how do you get the shell to go 76 miles? The answer was to send it into the stratosphere as fast as possible. Once there the shell coasts through a near-vacuum without the enormous resistance of the atmosphere to slow it down. Eventually gravity pulls it down into the atmosphere and then it falls relatively steeply. To reach maximum range in these conditions the gun has to be elevated to an angle of 55°, to reach the stratosphere as quickly as possible, whereas the normal angle for maximum range for ordinary artillery is 45°.

The next problem is that while the shell is up in the stratosphere the earth is revolving beneath it, and when the shell finally lands it will miss the target by a considerable amount unless a correction is applied to take this relative movement into account. The extent and nature of the correction depends on how the flight of the shell is orientated in respect to the earth's rotation.

If the shell is fired from east to west then, since the earth is rotating in the opposite direction, the target will be further away in distance over land than the maximum range of the gun. By the time the shell lands the target will be in range. The reverse is true if firing from west to east. For bearings between these extremes, the correction varies accordingly. This is a considerable simplification of a difficult problem—the formulae for determining the correction are extremely complex.

A third problem is the mechanical one. To put a shell into the stratosphere requires a muzzle velocity of 5,000fps, otherwise the pull of gravity will force the trajectory to curve before the stratosphere is reached. This velocity demands a large charge of the most powerful propellant—the Paris Gun used 335lb—and powerful propellants develop extremely high temperatures in the gun which literally wash away the interior surface. Each successive shell seats a little farther into the barrel when loaded because of the erosion and this leaves a greater volume behind the shell for the charge.

This has to be taken into account otherwise the increased volume would lead to lower pressure and less velocity,

RHL/USNA

△ *Odd one out! A gun on a flat-car is not a true rail-gun which should have an integral carriage; this 17cm (6.7in)* Samuel *heavy field gun on a gondola is a 1916 version of the earliest railborne artillery. It fired a 138.4lb shell.*

RHL/USNA

△ *The Dinosaur's feed. A 1,652lb 38cm (15in) shell is being wheeled on a trolley to the hoist which will lift it to the gaping breech of this 265-ton monster, nicknamed 'Max'.*

▽ *The 38cm* Schiffskanone L/45 Max Eisenbahn Gerust *fires out of its wooded lair from a ground platform. Note the huge counter-weights seated on the muzzle-heavy, 56ft barrel.*

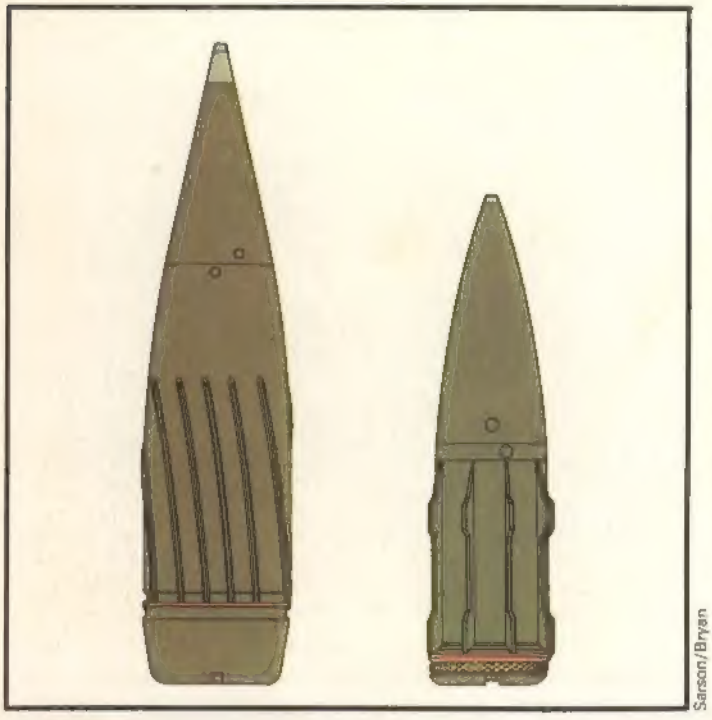
RHL/USNA

leading, in turn, to shorter range. With the Paris Gun therefore, the distance the shell had been rammed had to be measured. The new chamber volume and the weight of propellant needed to reach the desired velocity in this new volume had then to be calculated. The correct amount of propellant for each shot then had to be weighed out and bagged.

Shells are spun in flight to stabilize them. The spin is given by the soft copper driving-band that engages the gun's rifling. But with super-guns, the normal rules do not apply. The enormous pressure needed to send the shell out of a 112ft barrel at 5,000fps sets up such a torque (twisting force) as the shell enters the rifling that soft copper shears and fails to spin the heavy shell. The answer was to make the shells with steel ribs on the body, spiralling to match the curve of the gun's rifling. Also, instead of the 64 grooves normally used with a 21cm gun, 12 deep and wide grooves were cut for the shell ribs to ride in.

The Germans, having satisfactorily overcome these and other problems and made a success of the Paris Gun, remained enthusiasts for super-guns during the succeeding inter-war years. As soon as the *Wehrmacht* began rearming they demanded a super-long-range railway-gun. There was some wounded pride in this; the Paris Gun had been organized and manned by the German Navy, and the soldiers wanted to show that they too could fire super-guns. During the 1920s and early 1930s a lot of paper was consumed in planning a new weapon.

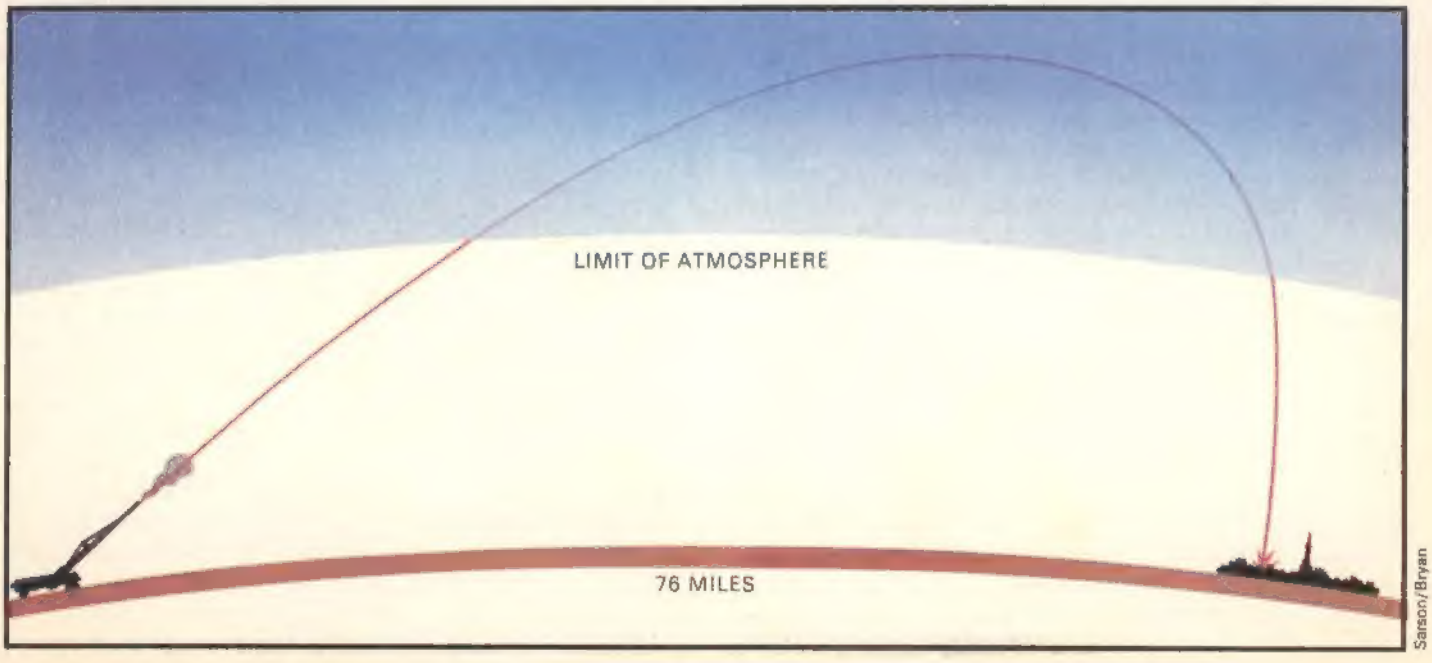
▷ *A number of forces act upon shells fired by very long-range guns. An inertial effect, caused by the rotation of the Earth, means a falling shell will miss the target to the west or the east depending in which direction the gun is fired. The rarity of the air in the stratosphere also affects trajectory.*



Sarson/Bryan

◁ *The 529lb shell (left) is a 28cm* Kurz Bruno Kanone 5 *HE round (60lb TNT filling) with 12 lands of 18in-long rifling 2.5in apart to fit 12 grooves in the barrel. It was the splined shell technique of 1935, earlier devised for the 21cm* Kanone 12, *whose 236lb shell on the right is rifled with eight lands of 14.2in length. The shells have copper driving bands (orange) and the 21cm has a greased cloth packing ring colored yellow. Above the lands on each shell is a pair of obliquely cut key holes.*

▽ *The Paris Gun's trajectory puts a shell into the near vacuum of the stratosphere and it plummets earthward as gravity asserts itself.*



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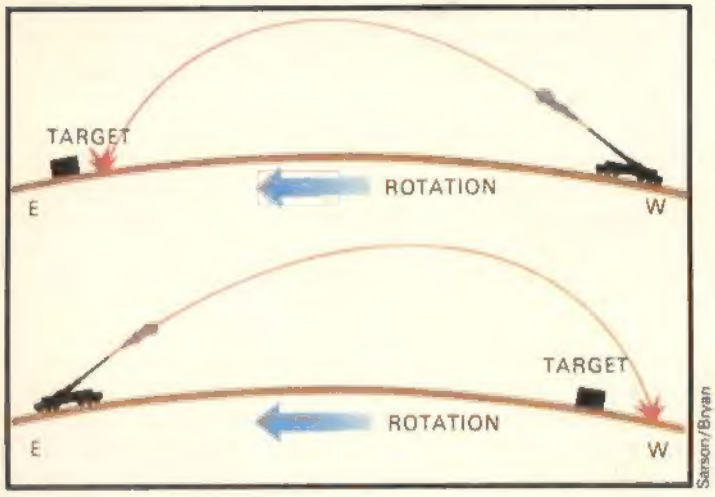

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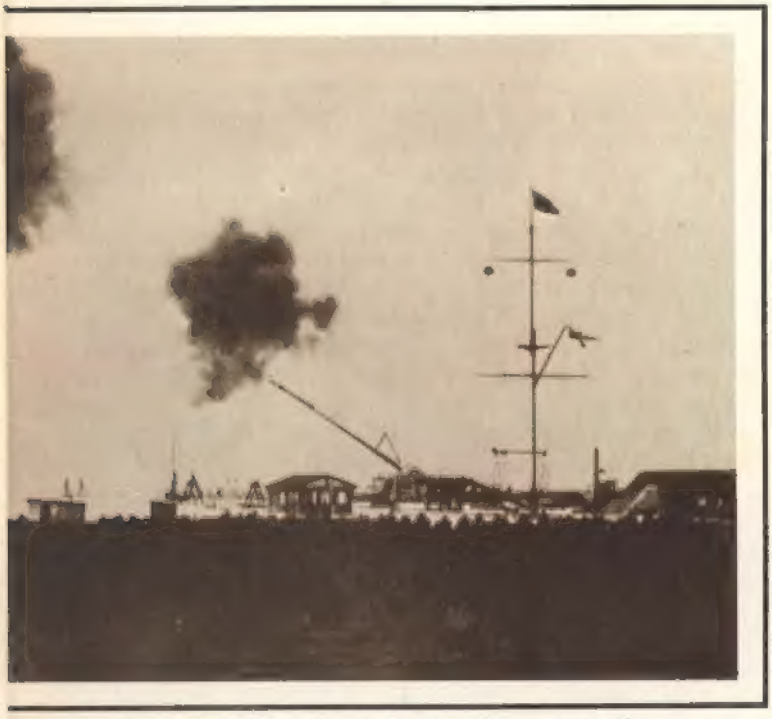


Imperial War Museum

△ *The original Paris Gun being test fired on the Krupp range at Meppen by the river Ems in the summer of 1917. Conceived by an Austrian ballistician and demanded by Gen. Ludendorf, the gun was under the control of the German Navy Ordnance as the flag mast ensign (right) indicates.*

Imperial War Museum

The specially braced 112ft barrel of the Paris Gun towers within the Krupp factory shed at Meppen. Officially named the 21cm Kaiser Wilhelm Geschutz *('William's Gun') it became known as 'Long Max' and 'Big Bertha'. Krupp built seven and Skoda began three, although none were found.*

In 1933, work began on turning the plans into reality. A number of 105mm gun barrels, rifled on different systems, were constructed. These were tested in 1935. The results showed that a barrel with eight deep grooves, firing ribbed shell like that of the Paris Gun, was the best solution, and a full-sized 21cm barrel was built. A railway mounting was built consisting basically of a steel box with two 10-wheel bogies at the front and two eight-wheel bogies at the rear. To absorb the recoil without the mounting moving, two hydro-pneumatic systems were incorporated, one allowing the barrel to recoil within a cradle, and the other allowing the barrel, cradle and their supporting structure to recoil within the basic mounting.

The gun barrel was 109ft long and had to be braced along its length to stop it bending under its own weight. It also had to be balanced well forward of the breech so that it could be elevated relatively easily. But this meant that the breech was liable to foul the railway track beneath the mounting when the gun was elevated. To overcome this, the whole mounting could be lifted 3ft from its bogies by hydraulic jacks before firing.

A special firing track was carried on the gun train to enable the gun to be pointed. This allowed a 'T'-shaped track to be laid at the firing site. The gun was then pushed up the track by a locomotive until its front bogie unit rested on a turntable. The turntable then revolved through 90° so that the front bogies could be driven across the top of the 'T' by an electric motor on one axle. Movement of the bogies thus traversed the whole gun, and once it was correctly aligned the bogies were clamped to the track.

This weapon, the 21cm Kanone 12, was completed in 1939, and a second, slightly different version, in 1940. They were, however, little used in the war years. They did bombard parts of Kent in 1940 and 1941 and fragments of

the unusual shells were found near Chatham, 55 miles from the nearest point on the French coast. They were identified with other fragments, from the Dover and Folkestone areas, but this is the only record of their employment. The gun's maximum range, with a 236lb shell, was 71.4 miles—and the minimum range, limited by its lowest firing elevation of 25°, was 28 miles. The situations during World War II in which this sort of range bracket was of use were very limited.

Despite spending a colossal sum of money on these two guns, the German Army ordered a rather more ordinary 28cm gun, the Kanone 5, as their standard heavy railway-gun. The gun barrel was 70ft long—considerably shorter than the Kanone 12 and it also used the splined shell technique. Its maximum range was 38 miles with a 563lb shell. A rocket-boosted shell was developed later and this pushed the range up to 53 miles. Finally the Peenemunde Research Establishment developed a fin-stabilized 'Arrow Shell' which, fired from a smoothbore barrel, reached 93.8 miles. Thus the 28 guns of this type that were produced ultimately outranged the two massive Kanone 12 guns.

The *Wehrmacht* had 14 different models of railway-gun in service during the war, but few were used to great effect. A 28cm K5 operated against the Anzio beach-head in 1944 and gained a reputation as a result, but the only other German railway-gun to make a name for itself was the enormous 80cm Kanone, known variously as 'Gustav' or 'Dora'. It was something of a white elephant from the start as the German Army were not enthusiastic—it appears to have begun partly as a design exercise and partly as a propaganda stunt in the Krupp factory in 1935. That year the German Army were studying the French defenses in the new Maginot Line and they asked the Krupp design office what size of guns would be needed to penetrate the thickness of concrete boasted of in French newspapers.

Krupps replied with some ballistic data for hypothetical guns of 70cm, 80cm and 100cm calibres. The matter rested there until March 1936 when Hitler visited the factory. He raised the same question, was given the same figures, and was told that although such monster cannon were a difficult proposition, they could be built.

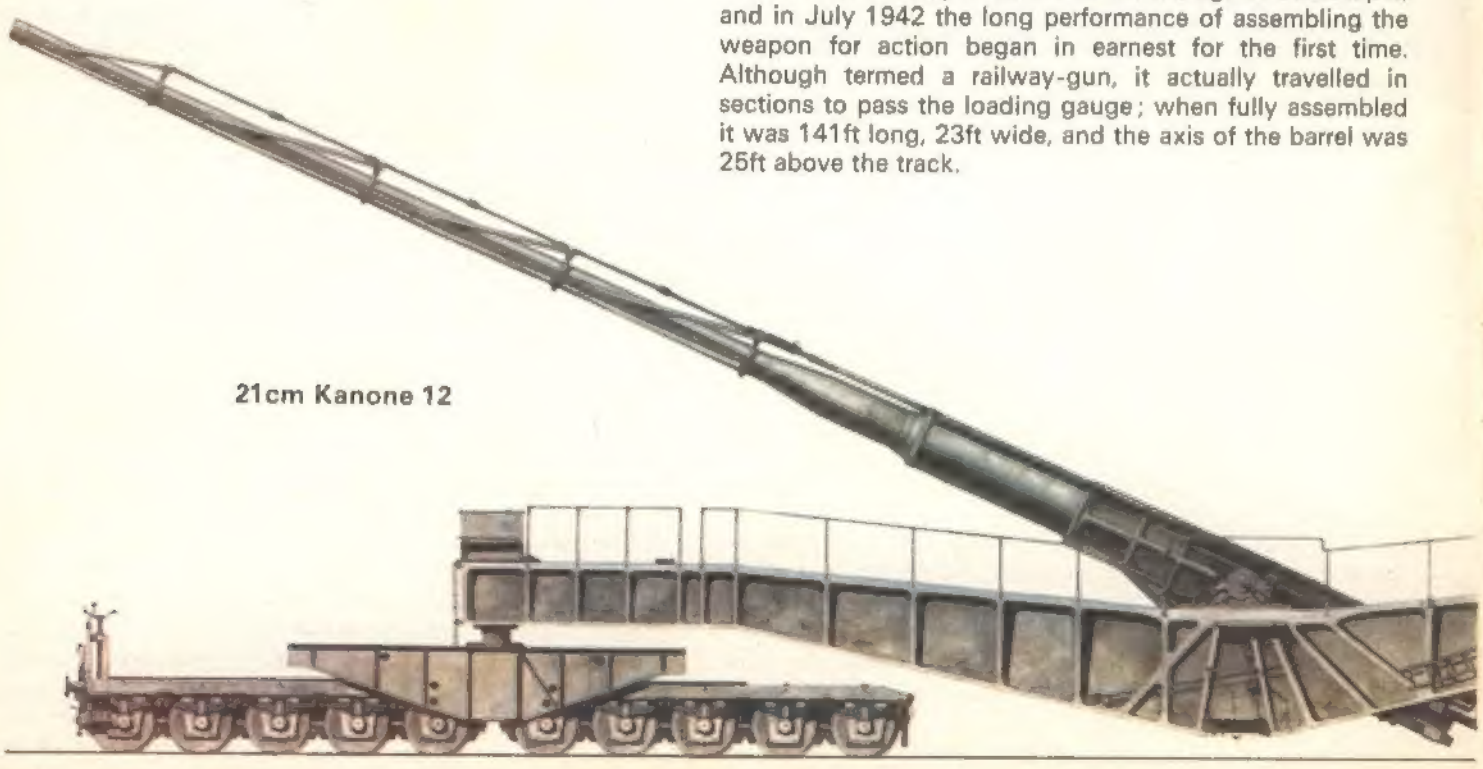
After the Fuehrer had departed, Gustav Krupp von Bohlen decided to take a gamble. He set a design team to work on the 80cm model, and in early 1937 laid a set of drawings before Hitler, who approved. A sum of 10 million marks was allotted, and construction began. The gun was to be ready to demolish the Maginot defenses by spring 1940.

That was the plan—the manufacture of such a weapon was even harder than Krupp had anticipated. Forging and machining the massive barrel posed particularly difficult problems and spring 1940 came and went without the 80cm gun. In the event the Maginot Line was outflanked rather than demolished so nobody, apart from Hitler who reputedly had some harsh words to say to the Krupp management, really missed the wonder gun.

The gun barrel was completed by the end of 1940 and fired for the first time on the Hillersleben Range near Magdeburg early in 1941. Finally, about a year later, the whole equipment was ready. It was taken to the Rugenwald range on the Baltic coast of Pomerania where it was assembled and given its final firing tests. Hitler witnessed these test firings and afterwards Krupp formally presented the weapon to him, free of charge, as Krupp's contribution to the war effort. It was christened 'Gustav' in honor of its originator, Gustav Krupp. The German *kanoniers*, being no more respectful than any other gunners, irreverently nicknamed the weapon 'Dora', which is why, for a number of years, it was assumed there were two of them.

It is interesting to note that in 1940 a British Army publication, 'Notes on the German Army', listed this weapon as 'unconfirmed but possible' together with its weight of shell, range and muzzle velocity, all of which were remarkably close to the correct figures; and that was before it had even been fired.

Gustav eventually went to war at the siege of Sevastopol, and in July 1942 the long performance of assembling the weapon for action began in earnest for the first time. Although termed a railway-gun, it actually travelled in sections to pass the loading gauge; when fully assembled it was 141ft long, 23ft wide, and the axis of the barrel was 25ft above the track.



21cm Kanone 12

Obviously it could not be hauled about in one piece. The gun itself was broken down into five units; breech ring and block, the barrel in two halves, the barrel jacket, the cradle and the trunnions. The rest of the mounting was split lengthwise so that as well as being dismantled from the top down it was broken into two halves for travelling. All these components were carried on special flat wagons, the bogie units running on their own wheels.

A special four-track section was laid to put the gun into action; on the inner tracks the gun bogies were assembled and linked together, and on the outer pair ran a gantry crane for assembling the weapon. The various parts of the mounting were then built up on top of the bogies; the barrel was assembled by inserting the rear half into the jacket and then fitting the front half on and locking everything together with a massive junction nut. The barrel was then fitted into the cradle and the whole assembly hoisted up and lowered into the mounting. After this the breech ring was fitted to the end of the barrel by another huge nut and the 20-ton breech block slid into place.

The whole process of assembling Gustav's 1,329 tons took about three weeks and a force of 1,420 men commanded by a Major-General. Once ready it opened fire on Soviet fortifications with 7-ton concrete-piercing shells. One shell penetrated 100ft of earth and detonated inside an underground ammunition store. As well as this shell (which had a maximum range of 23 miles) Gustav was used to pitch 4.7-ton high explosive shells into the besieged city of Sevastopol; with this shell the maximum range was 29 miles.

After this engagement Gustav trundled out of the limelight. Its only other recorded appearance was outside Warsaw in 1944 when some 30 shells were fired into the city during the abortive rising. After that Gustav vanished and did not reappear. Numerous reports of its discovery in pieces, its scrapping, its capture or abandonment have been studied, but none of them stand up to close examination; spare barrels and ammunition were found, but the gun itself has never turned up. It seems likely that it was scrapped some time in late 1944.

What did the mighty rail-guns achieve? The Paris Gun killed 256 people, injured 620 and did little damage to property. Instead of bringing Paris to its knees, it had, if anything, the opposite effect and stimulated, rather than destroyed, French morale. According to one source, the price of each shot was 35,000 marks, and nearly 10 million marks-worth of ammunition was expended to kill 256 people. In this grim equation the cost of the weapon itself has to be considered.

Imperial War Museum

The last word in rail-guns—the 80cm (31.5in) Gustav Gerat Dora L/40.6 *elevated at the full 65° to shoot for Hitler on the Rugenwald range in 1942. Note the twin crane hoist for the 25ft-long shells. Gustav, once intended to bombard Gibraltar, needed 250 men to fire her three times an hour.*

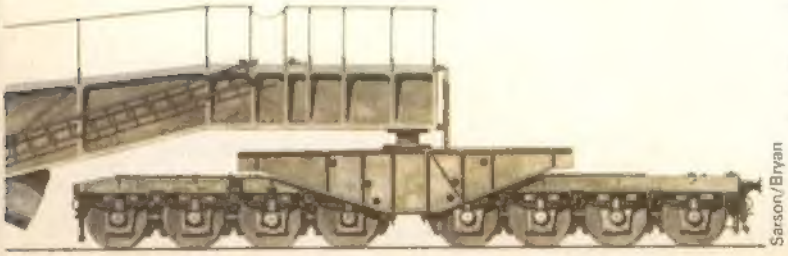
Gustav cost 10 million marks, and the price of the ammunition is unknown, but its only achievement seems to have been the demolition of a few Soviet defenses and one ammunition dump, which is unlikely to have shortened the war by as much as 10 minutes. The Kanone 12, which must have cost a fortune in development alone, threw a few shells into the County of Kent without much strategic result. Yet one Lancaster bomber with one bomb on the Mohne Dam on 16 May 1943 did more damage and had more effect on the conduct of the war—and that wasn't much—than all of them put together.

That, simply, is the reason for the Allies in World War II not having long range super-guns. For the delivery of high-explosive in large quantities at long range, the aircraft is by far the most economical proposition. It may not have had pin-point accuracy, but neither did these guns—the Kanone 5 rocket shell might land anywhere in a rectangle 8½ miles long by 2 miles wide, and a lot of bomb-aimers could do better than that.

For propaganda, for boosting morale, for frightening an unsophisticated enemy, the super-gun had its uses. As a cost-effective weapon of war, it is a non-starter. If the *Wehrmacht* had spent the money on developing and producing an efficient automatic rifle for their soldiers they would have had a better return on their outlay.

Ian Hogg

The 21cm Kanone *12—Krupps design improvement on the Paris Gun—was delivered to the* Wehrmacht *in March 1939, but only two were built. The barrel weighed 98 tons in a 297-ton total and the breech needed to be stopped from hitting the track. Elevation was restricted to between 25°-55°.*



Sarson/Bryan

CAN CAVALRY SURVIVE?

Has the last cavalry charge thundered across the battlefield? What is the future for the warrior on horseback?

'The blow by the cuirassiers was delivered on a front of two regiments: the other regiments followed the first two at the distance of a squadron frontage. These cuirassiers paid particular attention to keeping close formation and they never moved at a pace faster than a trot. One heard the officers constantly calling out, "Close up, cuirassiers, close up!" in the tone of an observation rather than a command. The attack was not made in columns, as the term is usually understood, but in a succession of lines at short distances. A little before the moment of impact, the generals and colonels gave a final order, *"En avant! Marche! Marche!"* repeated by the cuirassiers themselves, but without an increase of pace. *"En avant"*, is equivalent to the "Hurrah" of the Russians: it is a means of excitation.'

French infantrymen, having crossed the river Niemen into Russia in 1812, are harassed by Cossacks. The Cossacks were the first modern cavalry to carry lances, a weapon soon to be adopted by the cavalry of all European nations.

Mary Evans Library

In these terms General Count Bismarck, then a squadron commander in the Würtemberg Cavalry Division, described the attack by the French heavy cavalry at the battle of Eckmühl in 1809. Bismarck gave a picture of a slow-moving and irresistable mass of big men on big horses delivering the heavy battering-ram type of attack, which was to vanish from the battlefield until the advent of that armored horse, the tank. But cavalry's surrender of its role as the crushing attack force in battle took many decades and even now the rich history of warriors on horseback has not given way entirely to more technological methods of warfare.

Napoleon, whose soldiers thundered into battle at Eckmühl, was, as in so many other aspects of war, one of the greatest masters of the use of cavalry that the world has seen. Under him the cavalry arm reached its peak: after him there was a decline, hastened by the advent of rifled weapons.

Napoleon's cavalry was organized into three branches: light cavalry, heavy cavalry, and dragoons. The light cavalry (*chasseurs à cheval*, hussars, and lancers) were used primarily for reconnaissance and for such protective roles as advanced, flank, and rear guard, and outpost. They were also expected to be able to deliver a mounted charge, though their lighter horses did not have the same impact as those of the heavy regiments. The heavy cavalry (cuirassiers and carbiniers) constituted Napoleon's cavalry reserve; shock troops who were used either to break a shaken enemy line or to exploit the infantry success.

The dragoons were a medium cavalry and consisted of both mounted and dismounted regiments; the former, with their heavy fire power, could either operate with, and charge with, the heavy cavalry, or fight dismounted in the traditional dragoon role. The mounted dragoons were normally grouped with the heavy cavalry in the cavalry reserve corps—a formation which was considered sufficiently powerful to operate independently in deep reconnaissance.

To get results, Napoleon was prepared to accept heavy losses among his cavalry. He said: 'The use of cavalry demands boldness and ability, above all it should not be handled with any miserly desire to keep it intact', and, 'I do not wish the horses to be spared if they can catch men.' He condensed the importance of cavalry into the following two sentences: 'An army superior in cavalry will always have the advantage of being able to cover its movements, of being well informed as to the enemy's movements, and of giving battle only when it chooses. Its defeats will have few evil consequences, and its successes will be decisive.'

He emphasized, too, the importance of cavalry firepower: 'It is my wish that every man should have a musket; even if it be only a very short carbine, carried in the manner most convenient to the Cuirassiers; it is all the same to me . . . Please therefore put some proposal before me, so that these

Sonia Halliday

△ *Austrian cavalry are reviewed by the Austrian Emperor Franz Joseph and the German Kaiser Wilhelm II before the outbreak of hostilities in 1914. The improvement in small arms and artillery before World War I had led to trench warfare, placing many limitations on the mobility of cavalry.*

▽ *'I was invariably disappointed owing to small parties of Boers being able to keep off whole brigades of cavalry.' So wrote Lord Roberts, British CinC in South Africa, of Britain's fast-riding and fast-shooting Boer adversary. Here a success—British cavalry overrun a Boer position*

3,000 men may not have to depend on infantry to protect them in cantonments, and that they may be able to clear the way if any infantry, inferior to them in numbers, attack them . . . . As to the Lancers, see whether we could not manage to arm them with a carbine in addition to their lances; and should this be impossible, at least one-third of each troop ought to be armed with carbines.'

Napoleon declared that a long-range rifle was indispensable if cavalry was to be independent in all situations that might arise. The truth of this remarkable forecast was probably first confirmed by Nathan B. Forrest and other Confederate cavalry leaders in the western theater of the American Civil War, and it was later hammered home to the British Army in the Boer War.

Tactics in battle were based by Napoleon on a very close co-ordination of all three fighting arms. The artillery normally prepared the attack, forcing the enemy, if in column, to deploy into the less vulnerable line formation. Under cover of the artillery fire the infantry advanced and, as they approached the enemy position, the cavalry threatened to charge. To meet this threat the enemy infantry formed into squares, and these close-packed targets were then assailed once more by the artillery and by the infantry skirmishers.

The Napoleonic Wars were the last in which horsed cavalry were used successfully as the principal assault force on a battlefield—by the time the next major wars occurred the infantry were armed with rifles. Nevertheless, for some 50 years after 1815, cavalry tactics appropriate to that campaign were still being taught in the armies of Europe. In a British military text book of 1852, the tactics and maneuvers given for the cavalry are still based on Napoleon's campaigns, and examples are taken from his battles. Marshal

Parker Gallery/Mark Gerson

Marmont's is quoted with approval: 'Close combat and hand-to-hand struggles are the objects of the institution of cavalry. It ought to thrust home the sword's point on the enemy, to crush and overwhelm his ranks by its shock, to annihilate his shattered forces by a swift pursuit.' The official manual, from which this doctrine did not diverge, was 'Regulations for the Instruction, Formation, and Movements of Cavalry', dated Horse Guards, 1 January 1844. In 1852 the British infantry were being rapidly equipped with the Minié rifle, or 'Rifle Musket, Pattern 1851.'

The first major conflict in which the principal combatants were equipped with rifles and the first in which rifled ordnance appeared was the Crimean War. The consequent lesser importance of cavalry in the operations was obscured by the two great charges of the British Heavy and Light Brigades at the battle of Balaclava on 25 October 1854. The first was very successful, but it was against Russian cavalry trained in the same doctrine of shock action. The second, now known as the Charge of the Light Brigade, was a disaster; but the gallantry of those 700 horsemen, who charged through a zone swept by rifle fire from either flank against unbroken troops in a defensive position, so thrilled their fellow-countrymen that, paradoxically, the knee-to-knee charge was more firmly established than ever as the principal role of cavalry.

The American Civil War, particularly in the western theater of operations, showed how cavalry could best be used in the face of rifled weapons. Of the Confederate cavalry, Sherman telegraphed from Atlanta on 29 September 1864 to Henry W. Halleck, Army Chief of Staff, 'I take it for granted that Forrest will cut our road . . . . His cavalry will travel a hundred miles where ours will ten . . . . Hood now rests twenty-four miles south . . . . I can whip his infantry, but his cavalry is to be feared.'

The tactical employment of this Confederate cavalry was described by Lieutenant Colonel Arthur J. L. (later General Sir Arthur) Fremantle, Coldstream Guards, who saw them in action. He noticed that the 51st Alabama Cavalry were armed with long rifles and revolvers, but did not carry sabres, and says that in the western theater the Confederate cavalry normally fought dismounted as infantry skirmishers; a quarter of the strength being left in rear as horse-holders. He gives the following account of a cavalry operation:

'We found General Martin giving orders for the withdrawal of the cavalry horses in the front and for the retreat of the skirmishers. It was very curious to see three hundred horses suddenly emerge from the wood just in front of us, where they had been hidden—one man to every four horses, riding one and leading the other three, which were tied together by their heads. In this order I saw them cross a cotton field at a smart trot, and take up a more secure position. Two or three men cantered about in the rear, flanking up the leading horses. They were shortly afterwards followed by the men of the regiments, retreating in skirmishing order under Colonel Webb, and they lined a fence parallel to us. The same thing went on our right . . . . The way in which the horses were managed was very pretty . . . . They were never far from the men, who could mount and be off to another part of the field with rapidity, or retire to take up another position, or act as cavalry as the case may require.'

It appears that neither combatant in the Franco-Prussian War of 1870-1871 had studied the use of cavalry in America. Cavalry commanders on both sides believed that the charge was still as effective as it was in the days of the smoothbore musket. The first shock to this belief came at the battle of Froeschwiller when a French cavalry brigade charged the advancing German infantry to cover the withdrawal of their own infantry. Their line of attack took the French regiments into an enclosed area of hedges, walled vineyards, and trees. From behind this cover the German infantrymen poured a

German Uhlans in 1914. They were a copy of a Polish cavalry division—'uhlan' is a Polish word meaning a cavalryman armed with a lance. In fact, all German cavalry divisions had lancers. Of the role of the German Uhlans in Belgium in 1914 an early British history of World War I recorded that 'Soon the reputation of the Uhlans spread through hundreds of villages, as that of men who spared neither themselves nor their foes, who rode recklessly against any enemy in sight, who died with a laugh when beaten, and who slew man and boy, ruined women and burned homes without compunction and without mercy wherever they went.' The account is tinged with anti-German propaganda but it does describe the German cavalry's role as shock troops.

National Army Museum

'Into the valley of death' With 293 casualties out of 700, the Charge of the Light Brigade was a disaster but the gallantry of the British horsemen paradoxically established the knee-to-knee charge as the principal role of cavalry.

heavy fire into the charging horsemen. Nine French squadrons were destroyed in this disastrous charge.

But unfortunately for those who rightly proclaimed that the long-range rifle had banished the mounted attack from the main battle, the war of 1870 did produce one successful cavalry charge. At the battle of Vionville a German cavalry brigade, commanded by General von Bredow, was directed to charge a French artillery position which was holding up the German advance. A depression in the ground allowed the six squadrons of the brigade to get within two or three hundred yards of the French guns. The short charge which followed took the French completely by surprise. The Germans swept on over the slope behind the gun lines, but they were then checked by French cavalry attacking them in flank.

The ultimate fate of von Bredow's brigade was somewhat similar to that of the Light Brigade in the Crimea, for out of 800 troopers only 420 returned. But the German charge was far the more successful, for the guns of the French 6th Corps were silenced for the remainder of the battle. The long term effects were even greater, for this charge was cited repeatedly up to World War I as proof that the classic cavalry attack with sword and lance still had a place on the battlefield.

In the Russo-Turkish War of 1877 the effect of rifle fire on cavalry was noticed by a war correspondent of the 'Daily News', accompanying the Russian Army. He reported: 'The improvement in small arms has rendered the old-fashioned artillery quite out of the question, just as it has made cavalry, as cavalry, nearly as useless, except for outpost and scouting duty, and rendered bayonet and cavalry charges impossible.' It appears, though, that neither the Russians, nor any other European power, drew such a deduction.

The faulty training and leadership of the British cavalry in the Boer War exasperated Field Marshal Lord Roberts, the Commander-in-Chief. As CinC in India in the 1880s he had said, 'I feel sure that in future wars cavalry will be more employed upon dismounted work', and he had stressed that they had to be good riflemen. In South Africa the enemy were the type of cavalry which Roberts had in mind: mounted men who normally dismounted to fight and who were armed with rifles and expert in their use.

The emphasis on British cavalry training had been on shock action; the close order charge. As a result they were not very effective in the really important tasks of reconnaissance and interception, which Roberts required of them and in which Bedford Forrest had been such an expert, because they were always saving their horses for the decisive gallop with levelled lance and sabre. Roberts, therefore, was driven to rely increasingly on his mounted infantry for the role which he expected of his cavalry.

Initially the bulk of the mounted infantry consisted of 19 battalions of Imperial Yeomanry which had been formed from volunteer contingents supplied by the Yeomanry regiments in Britain. In addition, many mounted infantry companies had been organized and trained by regular infantry regiments. Roberts added to these latter, in time, by directing the newly arrived 6th and 7th Divisions to provide a company of mounted infantry from each infantry battalion.

Lord Roberts's disappointment in the performance of his cavalry is shown in a letter which he wrote to Erskin Childers in connection with the latter's book 'War and the Arme Blanche'. Of his operation in South Africa, Roberts says: 'I hoped that by turning their flanks the mounted portions of the force would have fallen upon them as they were retreating. But in this, as you have pointed out, I was invariably disappointed owing to quite small parties of Boers being able to keep off whole brigades of cavalry, and to the cavalry themselves never having been taught to fight under the altered conditions of modern warfare.'

The Boer War had shown that the Martini carbine, with which most of the cavalry were armed, was a very ineffective weapon compared with the magazine Lee-Enfield of the mounted infantry. After the war it was decided, therefore, that carbines should be abolished and that there should be one pattern of rifle for the whole Army. In order to make it

Dismounted action. With a well-trained mount the cavalryman had ready cover. Here Corporal Long of the British 17th Lancers displays the fighting technique that Dr. Leander Starr Jameson's 'Rough Riders' used against the Boer irregulars at Krugerdorp, in the Transvaal, South Africa

suitable for mounted troops, the Lee-Enfield was reduced in length and entitled the Short Magazine Lee-Enfield, or SMLE.

Many of the lessons of the Boer War were incorporated in the new 'Cavalry Manual' of 1904 thanks mainly to Roberts's efforts. The operations in France and Belgium in 1914 showed that the British cavalry alone were trained for modern warfare. The French cavalry, 100,000 strong, were armed with small and ineffective carbines. They were still drilled and trained for the close-order charge, and so inadequately instructed in reconnaissance they failed to detect the German advance. Their failure was calamitous, for the French armies were everywhere surprised. The German cavalry trained in much the same way as the French but were rather more effective because cavalry divisions had been re-organized to include battalions of Jager infantry armed with machine-guns.

But it was in the Palestine campaign that cavalry played a decisive role for perhaps the last time in major warfare. A number of comparatively minor actions in 1917 showed that against partially trained or second rate troops, mounted action was still effective. One such action occurred on 8 November. The 60th Division was following up a Turkish withdrawal over open rolling country south of Jerusalem, when its right flank came under heavy fire from an enemy rearguard, consisting of two infantry battalions supported by several batteries of artillery. Lack of cover led to a large number of casualties among the British infantry. Colonel Gray-Cheape, commanding the Warwickshire Yeomanry, was at divisional headquarters and Major-General Shea asked him to charge the enemy guns immediately.

Gray-Cheape had only a few troops of his own regiment under his immediate control, because his squadrons were covering a wide front, but he managed to collect some troops of the Worcestershire Yeomanry. He then led a composite force of ten troops by a covered approach which enabled him to get within 800 yards of the flank of the Turkish gun position. Deploying his force into three waves, he gave the order to charge and the cavalry swept out from the cover and straight at the guns.

The Turks hastily swung the guns round to engage and their escort of infantry jumped on to the limbers and opened

Imperial War Museum

Cavalrymen of the 2nd Cavalry Division of the British Expeditionary Force outside their headquarters on the Marne in 1914. As with the German cavalry bicycle riders were used to scout ahead of the horse soldiers.

French cuirassiers during World War I. These cavalrymen take their name from the cuirass, the armor breast and back plate that they wore. Prussian cuirassiers wore their armor only on parade after 1888.

RHL

rapid fire. The leading wave rode into the field guns; the second wave wheeled right-handed into the howitzers and then swung round to take the mountain guns in the rear, while the third wave passed through the field battery and rode down the machine-gunners. In a few minutes it was all over, but the cost of this von Bredow-like attack was heavy. Out of 170 all ranks, 75 had been killed or wounded and 100 horses were lost.

The British Mounted Corps in September 1918, with its four cavalry divisions, constituted one of the largest bodies of horse ever to operate tactically under one command. It consisted of the Anzac (Australia, New Zealand Army Corps) Mounted Division of nine regiments, the Australian Mounted Division of 10 regiments, and the 4th and 5th Cavalry Divisions, comprising five British Yeomanry regiments and 13 regiments of Indian cavalry.

General Sir Edward Allenby's Force Order No. 68 began: 'The Commander-in-Chief intends to take the offensive The Army pivoting on its position in the Jordan Valley will attack on the front between the high ground east of El Mughar and the sea with the object of inflicting a decisive

defeat on the enemy . . . .' The main attack was in the coastal sector where the infantry advance was to roll back the Turkish forces towards the east, clearing a path for the cavalry to go through. The Anzac Mounted Division had been left in the Jordan Valley, and one Australian Light Horse Brigade had been placed under the command of the attacking infantry corps. The whole of the rest of the cavalry was available for the breakthrough

The attack started at 0430 on 19 September 1918, and so rapid was the infantry advance that the way was open for the cavalry before sunrise. By 0900 the 5th Cavalry Division on the left was over the first obstacle, the Nahr Falik, and away on its dash to the north. By 1100 its leading brigade had reached Hudeira, more than 20 miles from the starting point. At dawn the next morning the 5th Cavalry Division had captured Nazareth and the staff of the German General Liman von Sanders, while the 4th had reached the Plain of Armageddon. This brilliant advance of the Desert Mounted Corps sealed the fate of the Turkish Army. It disintegrated and those portions which managed to escape to the north no longer constituted a fighting force.

This was the glorious finale of the horse soldier, for by

RHL

Chasseurs d Afrique, French light cavalry, on parade in 1941 when they owed their allegiance to Marshal Petain's Vichy government. The Chasseurs d'Afrique were formed, along with other special regiments, in 1832, two years after French troops had invaded North Africa

RHL

Polish Legion cavalrymen. Volunteer Polish units were formed in France, Russia and Austria during World War I with the aim of fighting for Polish independence. The first such unit allied itself with Austria and Germany.

1918 it was apparent to most armies that the mounted assault role had passed from the man on a horse to the men in a tank. During the 20 years which separated the two World Wars, cavalry of the major powers gradually exchanged their horses for armored cars. There was a notable exception, however. Poland formed no motorized or armored divisions and the Polish commanders, perhaps because of their weakness in cavalry during the war against Russia in 1920, still believed in the value of a large mass of mounted troops and in the cavalry charge as a potent factor on the battlefield.

Sir Basil Liddell Hart says that when in 'The Defence of Britain', published shortly before World War II, he expressed anxiety about the way the Polish military chiefs continued to put faith in cavalry charges against modern arms, the Polish Foreign Office was spurred by them to make an official protest against such a reflection on their judgement.

In 1940, France, though acknowledging the primacy of the tank in the main battle, relied on cavalry to delay any German advance through the Ardennes. A French friend of Liddell Hart, who was then in charge of a sector of the Meuse, begged the High Command for permission to fell trees along the forest roads leading to the Meuse. The time spent in clearing these would have effectively ruined the German chances, but the High Command replied that the roads must be kept clear for the advance of the French cavalry. And so, in a negative sense, cavalry played its part in the debacle of the French Army.

The last regular cavalry regiments in the British Army were mechanized in 1940. The 5th Cavalry Brigade of three Yeomanry regiments, the Cheshire Yeomanry, the North Somerset Yeomanry, and the Yorkshire Dragoons remained. In June 1941 the British forces in Palestine had the unpleasant task of taking the field against their former Syrian allies who were serving the French Vichy Government. Two regiments of the 5th Cavalry Brigade, the Cheshire Yeomanry and the Yorkshire Dragoons, served throughout the campaign. On two occasions the threat of a mounted flank attack by the Cheshire Yeomanry forced an enemy retreat and C Squadron of the Yorkshire Dragoons fought what may have been the last mounted action by British cavalry.

Kuban Cossacks. Cossack skill as horsemen is legendary and though Cossack communities were suppressed by early Bolshevik rulers, five existing Red Army divisions were renamed Cossack divisions in 1936 and fought in World War II.

Novosti

Though cavalry played only a minor part in British operations during World War II, they were quite extensively employed by both sides in the Russian theater. At the start of the war, in 1939, the Germans had a cavalry brigade and four light divisions, each with mounted rifle regiments. The cavalry brigade fought in the Polish campaign attached to an armored formation.

This was not the end of the German use of cavalry. Cavalry regiments and formations operated in Russia until the end of the campaign. In May 1943 six independent cavalry regiments were grouped to form the Cossack Division, on the Russian model, with two cavalry brigades each of two regiments, two artillery regiments, a signal battalion, an engineer battalion, and a horse-drawn supply company. Between February and March 1944 more independent cavalry regiments were taken from the formations to which they were attached to form two cavalry brigades.

At the end of 1944 the Cossack Division was taken over by the *SS* (*Schutzstaffel*) and joined to the existing *SS* Florian Geyer Cavalry Division to form 15 *SS* Cavalry Corps, and in February 1945 each of the two cavalry brigades was increased in strength to a division. By the end of the war there were two Army and four *SS* cavalry divisions, with a fifth forming. The Germans, thus, found a continuing need for cavalry formations, though this may have been partly due to the inability of industry to supply the vehicles needed for armored reconnaissance and protection. The organization of cavalry divisions and brigades to meet modern conditions is of considerable interest.

The Russian Army started World War II with the large number of 30 cavalry divisions (some of which were organized in cavalry corps) and several independent cavalry brigades. A cavalry division had a strength of 7,000 men and consisted of three or four horsed cavalry regiments, a horse artillery regiment, and divisional services. Sometimes a mechanized cavalry regiment, equipped with tanks was added. During the war divisional strengths dropped considerably and were sometimes as low as 3,000.

Cavalry's harassing role

A large cavalry force was retained by the Russians because mounted troops could operate in any type of country and in weather conditions which dissolved the unmetalled Russian roads into impassable mud. When the Russian counter-offensive started, cavalry were successfully used to exploit a breakthrough, in conjunction with armored forces. The cavalry corps played a large part in these operations and also proved valuable in a harassing role. During the advance of Kleist's 1st *Panzer* Army into the Caucasus, the Russians brought cavalry divisions down the Caspian coast to harass Kleist's eastern flank. Operating over the wide plain of the steppes, the cavalry were able to penetrate the widely stretched German defensive screen whenever they chose and cut off supplies.

The German Army included one curious Russian cavalry unit. Headquarters 40 *Panzer* Corps, embarrassed by 18,000 Russian prisoners, conceived the idea of separating the rather pro-German Kuban and Don Cossacks from the remainder, mounting them on some of the numerous stray horses, and using them as an escort to take the prisoners to the rear.

The Cossacks were delighted and one of the prisoners, Captain Zagorodnyy, organized a squadron and marched off with the prisoners. Corps headquarters thought they had seen the last Zagorodnyy, but a short time later the Russian officer reported back with his squadron for duty. Finally, the Germans decided to give the men four weeks training and then employ them as a Corps cavalry squadron. The Cossacks proved very efficient on service. Zagorodnyy exercised a strict discipline and had an enthusiastic second-in-command in Lieutenant Koban, commanding his 1st Troop. Koban's wife rode with the troop and took command of it when her husband was sick.

Imperial War Museum

The 'Field Service Marching Order' (regulation equipment) of a British cavalryman in 1918. Horse and soldier form a self-contained fighting unit with a special place for all the soldier's equipment together with forage for his horse

At the end of May 1944, when 40 *Panzer* Corps were withdrawing across the Rumanian frontier, the Cossack squadron was ordered to France (presumably to avoid any danger of officers and men being captured by the Russians). Six weeks later an Allied air attack near Saint-Lo caught the squadron in the open and it was almost wiped out; all the officers, as well as Koban's wife, were killed.

The end of World War II was not the end of cavalry. Iain Sproat, a British Member of Parliament, saw a regiment of Portuguese Dragoons in 1971 in operation against guerillas in Angola. The regiment was 350 strong and consisted of three squadrons of both Portuguese and African troopers mounted on horses obtained from the Argentine. The Portuguese Army found the regiment of great value because of its mobility and flexibility. It was used with great success for reconnaissance and for flushing out guerillas. There is much cover in the country, the horses moved quietly, and horse and rider were likely to be invisible at over a distance of 30 yards. Parties of guerillas were often surprised and then routed by a mounted charge. The regiment operated by troops; one troop of 40 men would spread itself out to intervals of about 20 yards between neighbouring riders, and would cover from 40 to 50 miles a day. Men carried rations for five days; at the end of that period they returned to base for a day's rest, and then went out for another five days.

As such recent events show, cavalry can still, in certain circumstances, perform a useful function in war. There are types of country over which, at least in unfavorable weather conditions, armored forces cannot move and fight efficiently.

By kind permission of the 67th Queen's Own Warwickshire & Worcestershire Yeomanry/Gordon Holland

The British charge on Turkish gun positions at Hajj in Palestine on 8 November 1917. This daring von Bredow-like attack saved the British infantry from further murderous bombardment but at the cost of 40 per cent cavalry casualties

Cavalry may then be able to replace them for close reconnaissance, which is difficult from the air, and in the provision of protective screens. Given wide expanses of country and open flanks against which they can operate, they can be invaluable for harassment.

In close country, in guerilla warfare, they can be unique in providing a swift and silent means of reconnaissance and attack, and in such country their comparative invisibility gives some immunity from modern arms. In major warfare, as has been seen, cavalry can be used in conjunction with armored forces to exploit and pursue, and it may be that, with the increased vulnerability of armored vehicles to guided weapons and helicopter attack, the potential value of cavalry has even increased.

Because the conditions under which the use of cavalry can be justified are so restricted, it seems unlikely that cavalry units or formations will be organized until those conditions appear. Armies, such as the British and the American, need to provide units which can be transported to, and operate in, any part of the world. It is not normally practicable, therefore, to spare valuable manpower in peacetime for an arm of the service with such limited potential. Limited war or confrontation, though, can occur under so many different circumstances and in so many different regions and types of country, that it would be precipitate to say that neither British nor American cavalry will ever fight again.

Colonel H. C. B. Rogers

Soviet Red Army cavalrymen, commanded by General Dovator, on their way to defend Moscow against the German invader in 1941. The Red Army had a huge force of 30 cavalry divisions in 1941 and this was increased to 41 later in the war

Novosti

'CHARIOT' HEROES

Conventional submarine methods had failed. So they defied death and rode torpedoes under the RN's battlefleet

The Royal Navy tanker *Denby Dale* was lying peacefully at anchor in the Grand Harbor of Gibraltar, one of the safest harbors in the world, when 500lb of high explosive went off underneath her, shattering her underplates. A few minutes later in the Bay of Gibraltar, just outside the harbor, the *Durham*, a cargo ship of nearly 11,000 tons, and the 2,500-ton *Fiona Shell* lurched and started settling down, victims of similar explosions. In this attack on 19 September 1941 by Italian two-man torpedoes the element of surprise was demonstrated perfectly. The crews of the three stricken vessels literally did not know what had hit them

The wartime midget-submarine was essentially a weapon of surprise and the first guided missile which sought out its target Today there are highly sophisticated guided missiles controlled impersonally by electronics, but midget-submarines were personally guided, by dedicated, determined and brave men. These men were employing the harassing tactics of the guerilla, adapted to war under the sea

The two-man torpedo was the result of more than five years' work and experiment at the Italian naval base of La Spezia. The work had been started in 1935 by two gifted Engineer Lieutenants, Teschi and Tesei. The *siluro a lenta corsa* (slow-running torpedo) or SLC was 22ft long, a cigar-shape of 21in diameter, and was powered by two battery-driven propellers giving a speed of two or three knots. Two compressed-air tanks regulated her depth. The two man crew, later known as 'Charioteers', sat astride the torpedo with the pilot in the forward position, and his assistant, or Number Two, in the after position. The detachable warhead contained 500lb of high explosive. The torpedo was an awkward and unreliable craft and well-deserved the nickname *maiale*, or 'pig', which her operators gave her

Usually a parent submarine carried the SLC to within striking distance of the target The torpedo approached the proposed victim just submerged so that the pilot and his Number Two had their chins barely above water-level. Both men wore underwater breathing apparatus, and as they neared their quarry they submerged completely and steered on a compass course. Once beneath the target the pilot stopped engines and blew water from the diving tanks. This increased buoyancy so that they could come up against the ship's bottom. Then, often in darkness, or at best in dim

An SLC (siluro a lenta corsa) *of the type used at Alexandria Range 10 miles, max speed 2 5mph, max depth 100ft, warhead 5ft long, containing 500lb of explosive 'Chariots' also carried limpet mines, each containing 10lb of high explosive*

Naval Ministry Ro

underwater twilight, the pilot located the bilge-keel, a wide ledge running down either side of an ocean-going vessel's hull to act as an anti-rolling device. His Number Two attached a line to the bilge-keel with a metal clamp and then the crew worked their way under the bottom of the ship to the other bilge-keel. The line, threaded through a metal loop on the warhead, was clamped to this bilge-keel. The warhead, fused to detonate in about two and a half hours, was detached from the SLC and left hanging under the doomed ship. In some cases limpet mines were also attached The crew then set course for home, the parent submarine, on the chassis of their two-man craft

November 1941 was a disastrous month for the Royal Navy in the Mediterranean. The 22,000-ton aircraft-carrier *Ark Royal* was sunk by a torpedo from the German submarine U81, commanded by Lieutenant Gugenberger, on 13 November. On 25 November, *Barham* who, with the *Queen Elizabeth* and the *Valiant* formed the battleship complement of the British Mediterranean Fleet and the real power source of the Royal Navy's domination of Mussolini's 'Mare Nostrum', was sunk by *U331*. *U331* fired four torpedoes at *Barham* from a range of 500 yards—three struck home, *Barham*'s magazine exploded, and the ship was blown apart along with two-thirds of her crew. To add to the Royal Navy's problems, the Italian Navy had been reinforced by the new battleship *Doria*, which joined the *Vittorio Veneto* and the *Littorio*: all of which were faster and more powerful than the British battleships. These events, and the fact that the Far East situation greatly lessened the prospect of replacements, caused a reshaping of British naval strategy

The first Allied priority, it was decided, was the protection of the two vital RN battleships. They were therefore ordered to the well-guarded anchorage of Alexandria Harbor until the situation in the Mediterranean became more favorable to their active employment.

This was the moment for Commander Ernesto Forza, the able and courageous chief of the Italian 10th Flotilla, which included two-man torpedoes, to think of attack. Conventional German submarine operations had cooped up the British in port—now only unorthodox Italian methods could get at them. Forza's specialist was Lieutenant Commander Prince Valerio Borghese, at that time commanding the submarine *Scire*, adapted to carry midget submarines and from whose deck previous midget attacks had been launched Borghese, a most accurate navigator and a brave and resourceful officer, virtually dictated the tactical operations of these very small craft.

The plan to attack the British battleships in Alexandria Harbor was devised with meticulous attention to detail with an overriding requirement for absolute secrecy. A wide use of aerial reconnaissance and information from other Intelligence sources discovered the normal mooring positions of the two vessels, the type of net defenses and shore-based defenses. Borghese, commanding *Scire*, was detailed to carry out the approach to Alexandria and the launching of the midgets from her deck

When an assessment of the available information had been made it was decided to use only three two-man torpedoes The crews of the midgets were selected from the most experienced men in the flotilla. The final selection was Lieutenant Luigi Durand de la Penne and Petty Officer Emilio Bianchi; Engineer Captain Antonio Marceglia and Petty Officer Spartaco Schergat; Gunner Captain Vincenzo Martellotta and Petty Officer Mario Marino

These men were veterans of previous midget submarine

1 *The submarine* Scire *converted into a mother-ship for the two-man chariots, a conversion made necessary by the limited range of the SLCs The chariots were carried in watertight steel tubes, fitted after a gun had been removed* **2** *'Human torpedo' veteran Lieutenant Luigi Durand de la Penne* **3** Scire *s captain, Lieutenant Commander Prince Valerio Borghese*

1

Naval Ministry Rome

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Naval Ministry Rome

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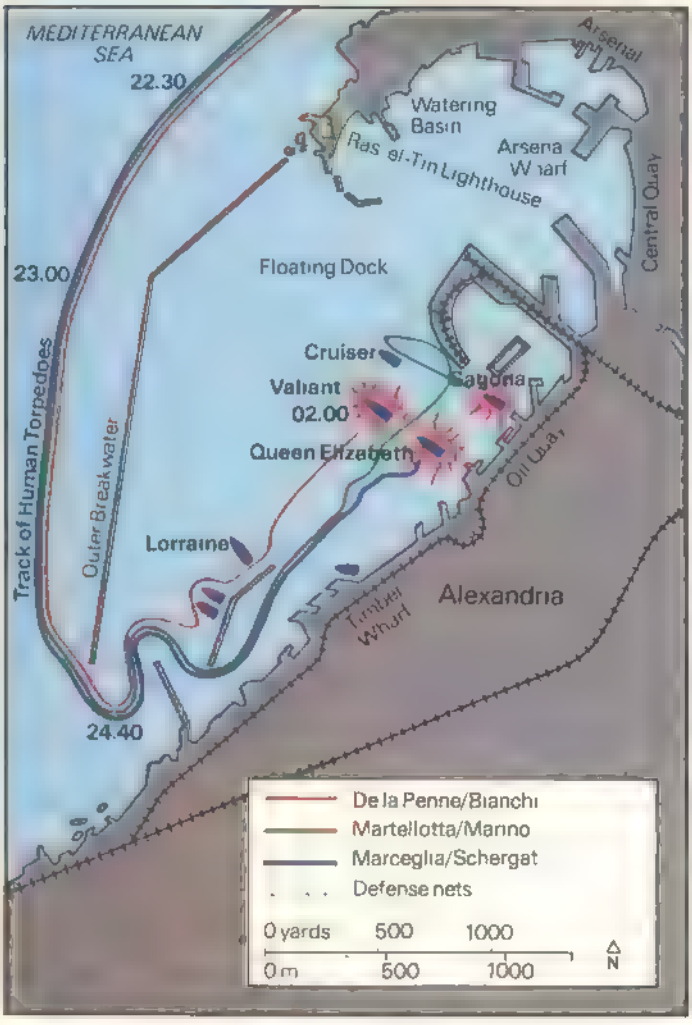
Naval Ministry Rome



Davis & Harrison VP Ltd/Ufficio Storico della Marina Italiana

The Italians had to skirt round the demilitarized French squadron (flagship Lorraine*) to reach their targets.*

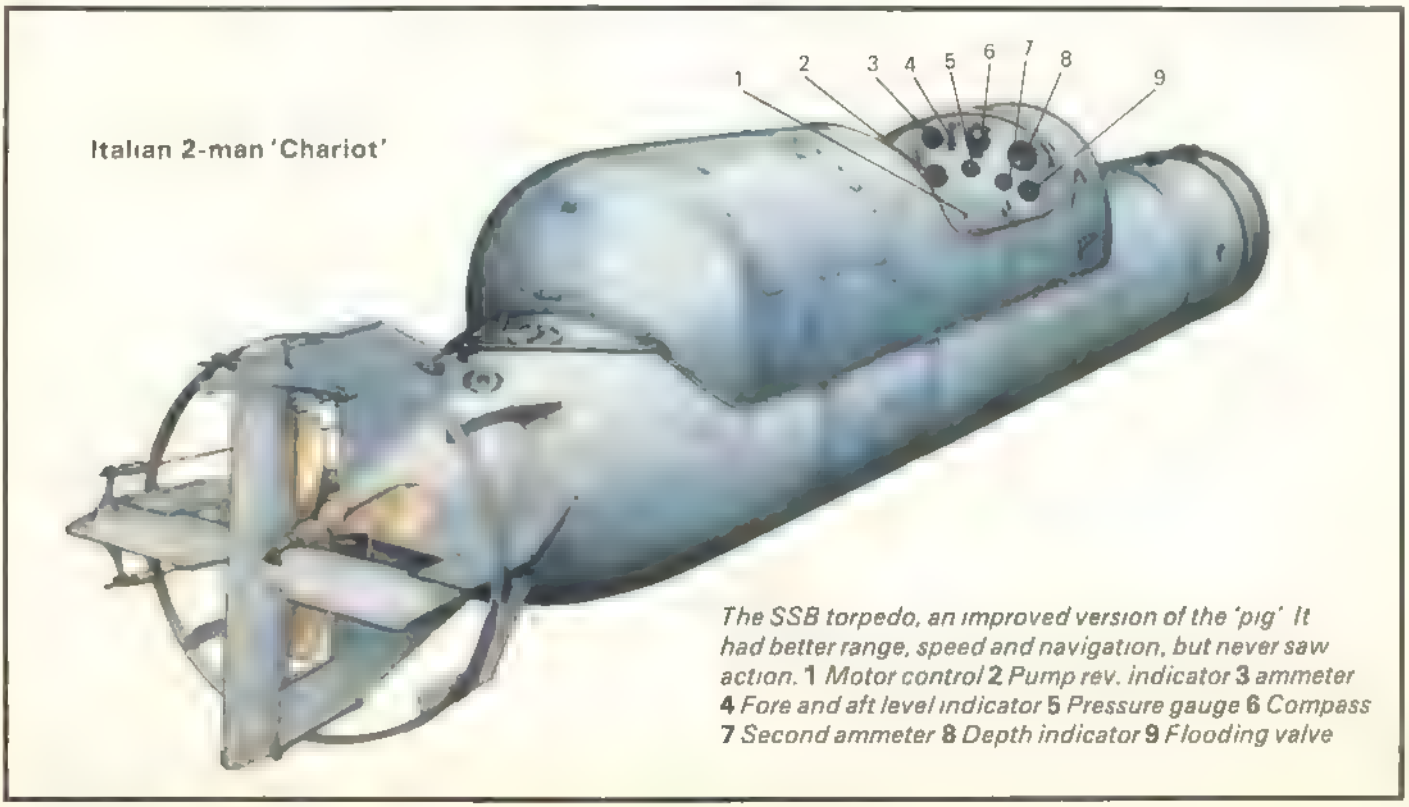
actions; including the unsuccessful October 1940 attack on the *Barham* at Gibraltar. All of them, together with selected sailors from the whole flotilla, had been subjected to rigorous training by Borghese in conditions similar to those expected in Alexandria. But, for reasons of security, nobody was as yet informed where the attack was to be mounted. When all possible preliminary work had been completed, hydrographical and meteorological information analyzed, radio links between the parent submarine and base decided upon, the operation was set in motion.

At twilight on 3 December 1941, *Scire* set out from La Spezia Harbor, apparently on a normal mission. When the submarine was well clear of the harbor, a lighter came alongside in the darkness and midget submarines 221, 222, and 223 were transferred to the containers on the deck of *Scire*, where the operators checked their craft. They then left the submariners. Thus Operation EA3, the third and most important attack on Alexandria Harbor by the 10th Light Flotilla, began.

Scire made her way by a devious route to the Italian-occupied island of Leros in the Aegean and entered Port Lago. On arrival, to avoid giving any hint of the purpose of the mission, Borghese had the midget craft in their containers covered with large tarpaulins to give the impression that *Scire* was there for repairs to damage sustained in action. Technicians arrived by air to give 221, 222 and 223 a final check and on 12 December the operators of the midgets arrived, also by air. They were quartered aboard the transport *Asmara*. Borghese visited them there, again for security reasons, to give a final briefing.

As well as the two battleships a third target was selected—a large naval tanker, known to be in Alexandria. The operational plan was for *Scire* to sail to a point just outside the harbor entrance where the midget submarines and their two-man crews would be unshipped. From then on the frail craft would be on their own.

The midgets would be steered on a fixed compass course



The SSB torpedo, an improved version of the 'pig'. It had better range, speed and navigation, but never saw action. **1** *Motor control* **2** *Pump rev. indicator* **3** *ammeter* **4** *Fore and aft level indicator* **5** *Pressure gauge* **6** *Compass* **7** *Second ammeter* **8** *Depth indicator* **9** *Flooding valve*

Sarson/Bryan

to the mouth of the harbor. They would negotiate the boom defenses, sail into the harbor, and attack their targets The targets were, for de la Penne *Valiant*, for Marceglia *Queen Elizabeth*, and, for Martellotta, the tanker. After the explosives were attached, floating incendiaries were to be released, timed to ignite some time after the detonations under the ships to set fire to the oil floating on the harbor waters. Having dropped off the midgets, *Scire* would then withdraw and return to base. Plans were also laid for the rescue of the crews if, and it was unlikely, they escaped capture or death. The submarine *Zaffiro* would cruise off the Rosetta mouth of the Nile delta for two nights, in the hope of picking up the frogmen.

Scire left Leros on the morning of 14 December with the midgets and their crews on the first leg of this dangerous mission. By day she travelled submerged, surfacing only at night to recharge batteries, and to get a welcome breath of fresh air Borghese needed all his skill for this mission. He also, by his own admission, needed any luck that was going, remembering the prayer of all submariners—'By guess and by God'.

He employed his skill to the utmost. Having navigated under the protective minefields, a scan through the periscope on the night of 18 December, showed Alexandria dead ahead, and very near—this followed a 16-hour period of blind underwater navigation. At 1840 *Scire* surfaced, about 2,500 yards from the lighthouse on the harbor mole. Conditions were ideal—a moonless night and a smooth sea. The midget submarines were launched at around 2000, and the fervent good wishes of *Scire*'s crew went with them. Then, according to plan, the parent submarine withdrew to return to Leros.

The six 'Charioteers', mounted on their fragile and agonizingly slow *maiali*, set off on their predetermined course. The pilots were able to verify their positions by some lights in the harbor and went ahead with such precision that de la Penne later reported: 'As we were ahead of schedule, we opened our ration tins and had a meal We were then 550 yards from the Ras el Tin lighthouse'

They reached the net boom at the entrance and de la Penne's report continued: 'We saw some people at the end of the pier and heard them talking. One of them was walking about with a lighted oil-lamp. We also saw a large motorboat cruising in silence off the pier and dropping depth charges. They were rather a nuisance.'

As worries about their ability to breach the defenses grew, the Italians had a stroke of luck. Three British destroyers, back from a Malta supply run, appeared out of the darkness, lights were switched on, and the gate in the net was opened The three midgets slipped through the gap with the destroyers. Their most difficult obstacle had been removed—they were inside! During the maneuver they had become separated, but each pilot knew his target and made for it.

De la Penne, with his Number Two, Bianchi, reached the anti-torpedo net defenses surrounding *Valiant* at about 0200 and got through, but his report did not indicate how Submerging beneath their target, the unreliable pig suddenly sank under them and went straight to the bottom in 50ft of water. De la Penne immediately dived after it and found it, but Bianchi was missing. De la Penne vainly tried to get the motor re-started. He then hauled the torpedo by force through the mud until it was about 10ft underneath *Valiant*'s keel and having set the fuse of the delayed detonator, and without time to release the incendiaries as the plan required, he made for the surface.

Once there he removed his diving mask, took a deep breath and began to swim away. A searchlight from a patrolling motor-launch picked him out and a burst of

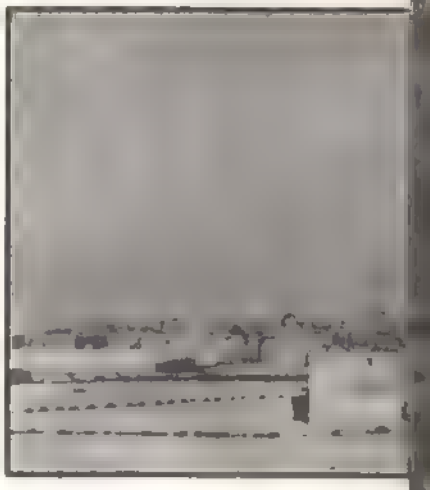
The Allied fleet in Alexandria harbor. The two British battleships, Valiant *and* Queen Elizabeth, *are on the left of the picture, close to land in the background. A French ship, identified by the tricolor on her stern, is seen center*

US Army

Imperial War Museum

Imperial War Museum

◁ 'Charioteer' frogman.
1 Woollen 'balaclava'
2 Camouflage netting
3 Dry-suit (top)
4 Mouthpiece
5 Oxygen filter
6 Oxygen bottle
7 Dry-suit (lower)
8 Flippers
▷ Target: HMS Queen Elizabeth, *flagship of the Mediterranean Fleet Explosives placed by Marceglia and Schergat rent a 40ft hole in the forward boiler-room of the battle-ship.*



machine-gun fire followed him He turned and swam back towards *Valiant* and climbed on to her bow mooring-buoy There, to his surprise, he found Bianchi. When the midget nose-dived he had become unconscious and was swept off On recovering he had swum to the buoy hoping that his presence would not be discovered. Unfortunately for the Italians, Bianchi's hope was not realized and the alarm was raised.

De la Penne and Bianchi were taken aboard the battleship and closely interrogated. They gave no information beyond producing their Italian Navy identity cards. They were then brought before Captain Charles E. Morgan, the commanding officer but still refused to talk. The CinC, Admiral Sir Andrew Cunningham, was roused from his sleep aboard his flagship, *Queen Elizabeth* at 0400. He ordered that the two Italians be clapped in irons in the very bowels of the *Valiant*. He hoped that the frogmen's proximity to their own device might induce them to talk ! There they stayed for two hours, still refusing to talk Then at 0550 de la Penne was forced to tell Capt. Morgan that it would be best to abandon ship, since *Valiant* would blow up within minutes. But still the Italians staunchly refused to say where the charges were planted

At 0620 the explosion occurred, blowing an 80ft hole halfway along the length of the keel. In the confusion that followed, de la Penne lost sight of Bianchi, and some time later was brought back on deck. He tried to ask Capt Morgan where Bianchi was but the commanding officer was too occupied giving orders to salvage his ship which was now listing four to five degrees to port and sinking by the bows. She soon settled on the harbor bottom.

Then, at 0624 de la Penne saw *Queen Elizabeth* lifted some inches out of the water by a further explosion. Adm. Cunningham, right by the stern flagstaff, was thrown 5ft into the air. A 40ft square hole had been blasted in the forward boiler-rooms. Later de la Penne was taken to the wardroom where he was again reunited with Bianchi. Subsequently both men were transferred to a POW camp near Alexandria, happy in the knowledge that their attack had been successful.

The attack by Marceglia and Schergat against *Queen Elizabeth* had been perfectly executed and every maneuver had been carried out exactly according to plan. After steering towards their target they negotiated the close-net defenses without difficulty. Once inside the final barrier they submerged beneath the target, immediately under the funnel The next phase of the attack was carried out as easily as if it had been just another practice run. The clamps were secured to the two bilge-keels, and the warhead hung in a perfect position, 3ft beneath the battleship's hull.

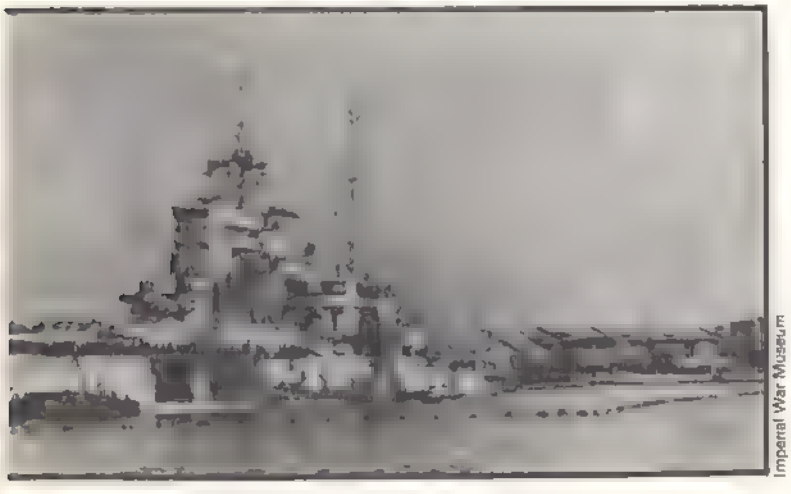
Marceglia's personal report takes up the story: 'I tried to analyze my sensations at that moment. I found that I did not feel particularly thrilled, but only rather tired and cold We got astride our craft again; my diver made urgent signs to surface, as he was just about all in. I pumped in air to surface. The craft only detached itself from the bottom with difficulty, then at last it started to rise, at first slowly, and then more rapidly. So as not to burst out of the water too suddenly I had to exhaust. But the air bubbles attracted the attention of the watch aft. He switched on a searchlight and we surfaced right into its rays. We ducked down on the craft to make the target as small as possible and to prevent our goggles from reflecting the light. Shortly afterwards the searchlight was switched off. We started on our return which took us past the bows of the ship. A man was walking up and down the foredeck, I could see his cigarette glowing Everything was quiet on board. We got out of the obstructed zone, and at last took off our masks It was very cold and I could not prevent my teeth chattering. We stopped again and started distributing incendiaries after setting the fuses.'

On the way to the agreed landing place, they activated the midget's self-destructor and sent her to the bottom They swam ashore, took off their rubber suits, cut them into small pieces and hid them. They had been in the water for just eight hours. They managed to leave the harbor area without being spotted, and, posing as a couple of French

sailors, entered Alexandria. There they wandered around to get their bearings and then made their way to the station to get a train to Rosetta so they could somehow rendezvous with the rescue submarine. They reached Rosetta—only to be picked up on the seashore by Egyptian police and handed over to the British and captivity. Their undoing had been the £5 counterfeit notes with which they had been supplied—they were a type which had not been in recent circulation!

In a letter that Marceglia wrote to Borghese later he stated simply; 'As you can see, Sir, our performance had nothing heroic about it; its success was due solely to the preparations made, the specially favorable conditions under which it took place, and above all the determination to succeed at all costs.'

The third pair of 'Charioteers', Martellotta and Marino, after nearly being run down by a destroyer in the darkness, proceeded to the tanker. The tremendous strain began to have its effect on Martellotta who developed a splitting headache, and vomited so much that he had to surface to remove his mask.



Imperial War Museum

Fearful of submerging again because of his bad condition, he went ahead on the surface. There he sighted the 16,000-ton fleet tanker *Sagona* and made for the target, still on the surface. On reaching the tanker Martellotta tucked himself under the shelter of the stern and kept the midget there while Marino, his Number Two, dived and secured the clamps to the bilge-keels. The warhead was fused and released so that it swung underneath the ship's propellers. While this was going on a smaller tanker came alongside

A report from Martellotta said: 'When Marino rose to the surface and saw her (the smaller tanker) he said "Let's hope she stays there another three hours then she'll have her hash settled, too." Next we started off again for the distribution of the incendiaries. We moored them about 300ft from the tanker and 60ft apart.'

Their victim, the *Sagona*, was the first to blow up, at 0600; her entire stern being torn off by the explosion. The other tanker had left the mooring, but the big destroyer *Jervis* sustained damage that prolonged her refit for another month.

Marino and Martellotta adopted their escape drill as instructed, got ashore and managed to get clear of the dock gates. Then their luck changed and they were stopped at a control point by the Egyptian police who handed them over to the British. After they had been interrogated 'courteously enough', as Martellotta put it, they were lodged in a POW camp at Cairo.

Italy's 'human torpedoes' had written a new chapter of naval history. Only six frogmen on three fragile craft with 1,500lb of explosive had crippled two capital ships, put a most important naval supply vessel out of action, and damaged a destroyer.

Valiant and *Queen Elizabeth* eventually got up enough steam to limp into dry dock but they were not to get to sea for many wearisome months. Their crippling left Cunningham's hitherto victorious fleet with five light cruisers and destroyers to face four Italian battleships and six cruisers. But Italy's surface ships were short of the fuel-oil and the daring needed to exploit the 10th Light Flotilla's triumph. The British clung to their naval supremacy and by late 1942 had weathered the crisis. Operation EA3 remained a brilliant but isolated stroke of surprise that did not yield a full strategic benefit.

The six frogmen were repatriated as the Allies reconquered their homeland. All of them received the *Medaglio d'Oro*—Italy's highest decoration. Meanwhile the British became the keenest practitioners of the Italian art; on 22 June 1944 an Italian MTB took in the British 'Chariots' that destroyed the German-held Italian heavy cruiser *Bolzano*. Ironically this 10,000-ton victim was anchored at La Spezia—the birthplace of the midget submarine. A more chivalrous scene was enacted in March 1945 when de la Penne received his *Medaglio d'Oro* from Rear-Admiral Morgan, the man whose ship he had sunk three years before

James Gleeson

Naval Ministry Rome

▷ *The courage and daring of the six 'Charioteers' was recognised by the British as well as by the Italians. In March 1945 the former enemies were united when Rear-Admiral Morgan, former captain of* HMS Valiant, *presented de la Penne with the* Medaglio d'Oro, *Italian equivalent of the VC*

STUKA

The 'screaming' Ju87 struck with deadly accuracy; it became the most feared and most successful dive-bomber of World War II

Ju87Bs of the Condor Legion flying over Spain during the Civil War. These aircraft were responsible for tremedous damage to the Republican bases It was at this period that the siren the 'Trombone of Jericho' –was added to the landing gear

Streaking almost vertically from the skies to drop its bombs with deadly accuracy on such vital targets as gun batteries, bridges, ammunition dumps, power stations and shipping, the Ju87 dive bomber became one of the most feared *Luftwaffe* aircraft of World War II. The fear was partly psychological—the scream of the plane's racing engine merged with the whistle of falling bombs to produce a terrifying howl, an effect deliberately accentuated when sirens were fitted to the bomber. Such was the Ju87's reputation that it gained a nickname—a contraction of *Sturzkampfflugzeug*, which meant *all* dive bombers. Friend and enemy accorded the accolade—to all, the Ju87 was, simply, the Stuka.

During the 1920s and 1930s the level bomber was not the highly accurate instrument of destruction it was claimed to be. Bomb sights were elementary and were not improved much until well into the 1940s. Germany had long been interested in vertical bombing and tests had shown it to be a far more accurate means of destroying selected targets than level bombing. With the need to build up the *Luftwaffe* quickly, from 1933 onward, the dive bomber had the advantages of both accuracy and cheapness.

The Technical Office of the *Luftwaffe* was divided over the dive bomber policy. Lieutenant General Wolfram Baron von Richthofen was against them, for he considered that they stood no chance against determined defenses. General Ernst Udet disagreed for he had been impressed with the performance of the US Navy's Hawks while in America and wished to utilise the same accuracy for the German Air Force.

The Ju87 was developed from the K47 designed by Karl Plauth in 1927 and tested at the Soviet airbase of Lipetz. In 1936 the prototype Ju87V.2 was tested in competition with three other designs and was selected as the *Luftwaffe's* standard dive bomber. Following some modifications introduced by the Junkers design team, led by Diploma Engineer Pohlmann, the Ju87A.1 production model made its debut and in the spring of 1937 it was assigned to the Immelmann *Geschwader*, or group.

When the civil war broke out in Spain, Germany sent the *Kondor* Legion to aid General Franco. The legion took with it, for tests under war conditions, three Junkers Ju87A.1s. The ungainly appearance of the Ju87 caused the *Luftwaffe* pilots in Spain to dub their aircraft *Jolanthe*, after a pig of that name in a German play. But there was no disputing the effectiveness of the dive bomber in combat, and because the *Kondor* Legion enjoyed maximum fighter cover, thanks largely to the new Messerschmitt Bf109, the dive bombers were able to operate undisturbed

During the closing stages of the Spanish Civil War the Ju87B.1 was also evaluated in Spain and proved extremely effective for pin-point bombing of targets like docks, ships and ammunition dumps. And the German pilots noted another advantage of the Ju87B.1, apart from the devastation of the bombs. In a power dive, the engine's high-pitched whine merged into the whistle of the falling bomb—the effect of this was so frightening and demoralizing that many ground troops broke and ran when under attack. Ernst Udet added to this effect by fitting special sirens on the leg of the Ju87's fixed landing gear, and this siren, nicknamed by

Stuka crews the 'Trombone of Jericho', added another facet to the growing Stuka legend.

The Ju87B.1 equipped the *Luftwaffe* dive bomber unit on the outbreak of the war in September 1939. It was powered by a Jumo 211Da engine of 1,100hp which gave it a maximum speed of 232mph at 13,500ft. The aircraft had a range of 370 miles and could carry either a single 1,200lb bomb under the fuselage or a 550lb bomb there and two or four 110lb bombs under the wings. Defensive armament consisted of two 7 9mm MG.15 machine-guns, one in each wing, with a further swivel-mounted, hand-operated gun of the same type in the rear cockpit.

The main bomb was carried in a cradle under the body of the aircraft and, when this was released, a fork swung the bomb out and down so that it fell clear of the propeller arc. To help aim the bomb during the dive the Stuka had a series of protractor-type lines marked on the cockpit which the pilot could use to line up his horizon. The pilot and the observer/gunner were seated back to back and the canopy was continuous with hinged sections. Dives could be carried out at angles of up to 90°, and Stukas are often depicted attacking vertically, but the usual angle was between 70 and 85 .

In an attack the Stuka pilot set the required angle of dive, accelerated, and when over the target applied the dive brakes. The dive brakes consisted of slats mounted behind the leading edges of each wing, outboard of the undercarriage legs, and had been designed to bring the speed of the dive to below 375mph, the limit, in the experts' view, that the machine could stand without the wings being torn off. One problem was that the pressure exerted on pulling out of a power dive often caused the pilot to black-out and lose control of the aircraft. This was overcome by fitting the Askania auto-pilot (a device first tested by a woman test pilot, Melitta Schiller) to the Ju87.

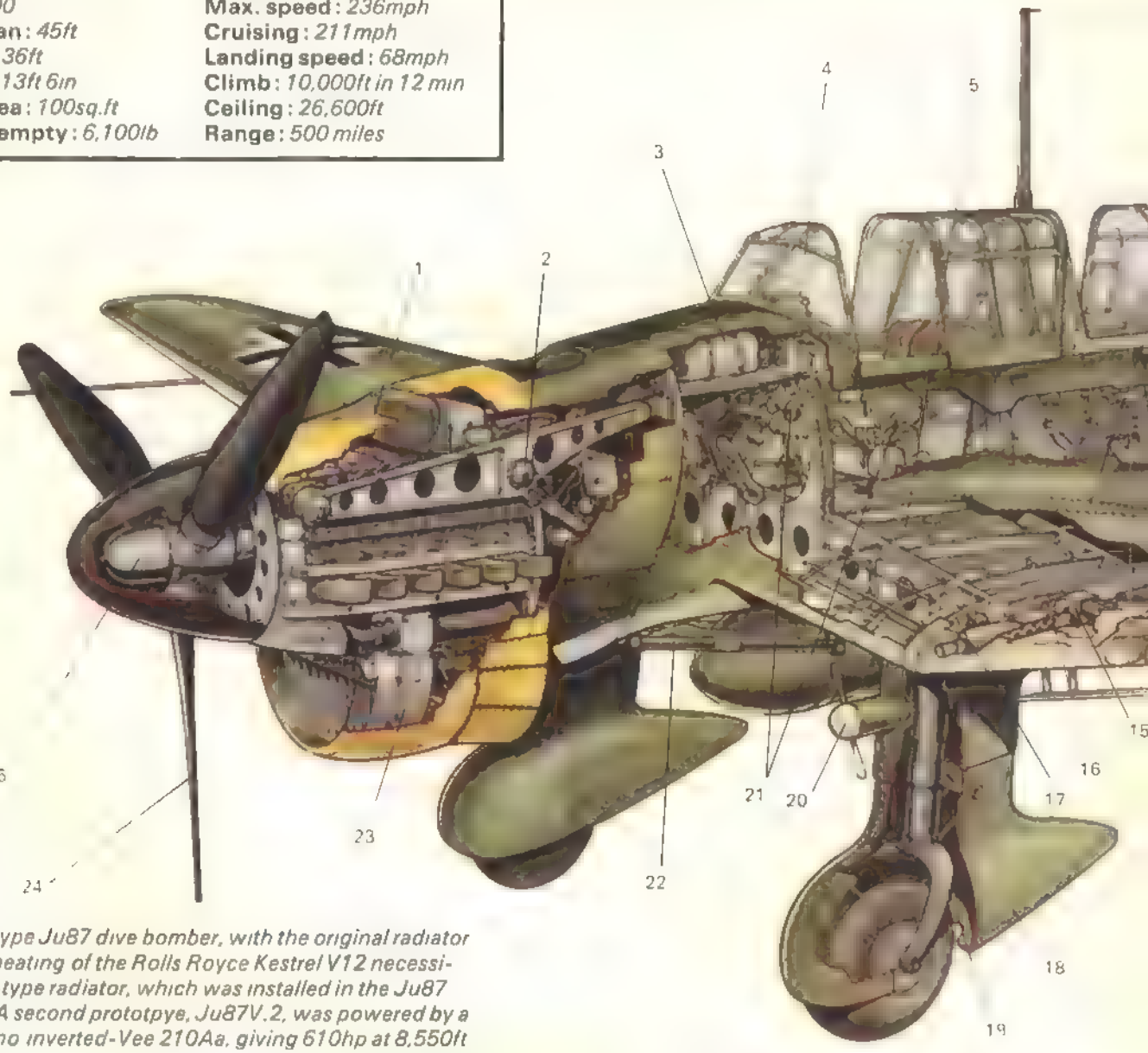
Despite its angular appearance the Stuka was an easy aircraft to fly. During the war an Italian Stuka was found intact in the Libyan desert and was tested by an RAF pilot, G. R. S. McKay. He subsequently reported that it was very light on the controls, visibility was excellent in the roomy cockpit and the aircraft had excellent handling characteristics.

In Spain the Stuka was found to be a very effective weapon against shipping. In June 1939 the Junkers *Nachrichten*, house journal of the Junkers company, commented that 'The havoc wrought in the port areas of Valencia, Tarragona, Barcelona etc, is chiefly due to the activities of the dive bombers, which also accounted for a large proportion of the ships wrecked on sunk.' The *Luftwaffe*, however, gave little emphasis to the Ju87's use in maritime air war. They were preoccupied with providing the Army with close support by all air arms. Plans for the invasion of Poland had been laid and war with Britain, and her Navy, was not expected until 1944. The Stuka was seen mainly as an ideal weapon for tactical warfare against pinpoint targets and in such a role it proved completely effective as long as enemy air opposition had been eliminated.

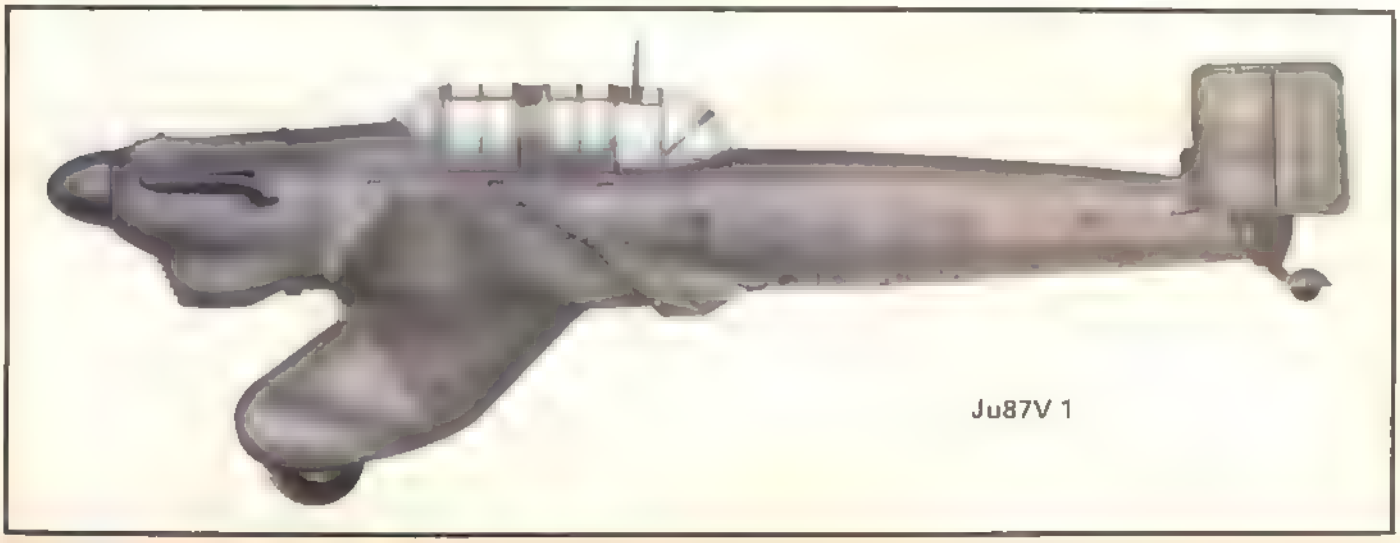
On 1 September 1939, when the German attacks went in

This Ju87A 1 shows the 'pig' insignia on the port undercarriage spat The unit, Jolanthe, *was the first Ju87A.1 group to join the Condor Legion in Spain Behind the Ju87A 1 is a Heinkel He112-V9, armed with two 20mm cannon and two 7 9MG*

Engine: *Jumo 211Da*	**Weight full:** *9,400lb*
HP: *1,200*	**Max. speed:** *236mph*
Wingspan: *45ft*	**Cruising:** *211mph*
Length: *36ft*	**Landing speed:** *68mph*
Height: *13ft 6in*	**Climb:** *10,000ft in 12 min*
Wing area: *100sq.ft*	**Ceiling:** *26,600ft*
Weight empty: *6,100lb*	**Range:** *500 miles*

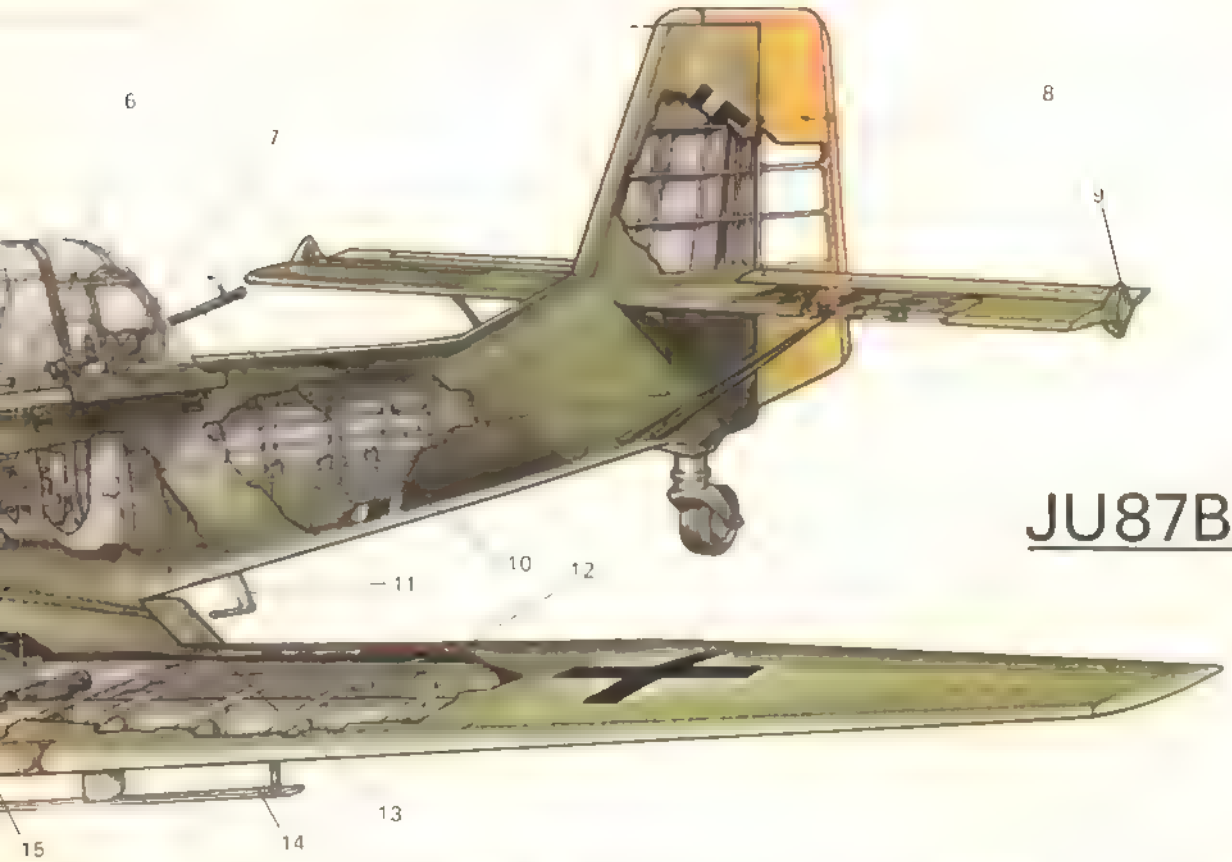


The prototype Ju87 dive bomber, with the original radiator bath. Over-heating of the Rolls Royce Kestrel V12 necessitated a chin-type radiator, which was installed in the Ju87 V 1 (Mod). A second prototpye, Ju87V.2, was powered by a Junkers Jumo inverted-Vee 210Aa, giving 610hp at 8,550ft



Ju87V 1

Sarson, Bryan



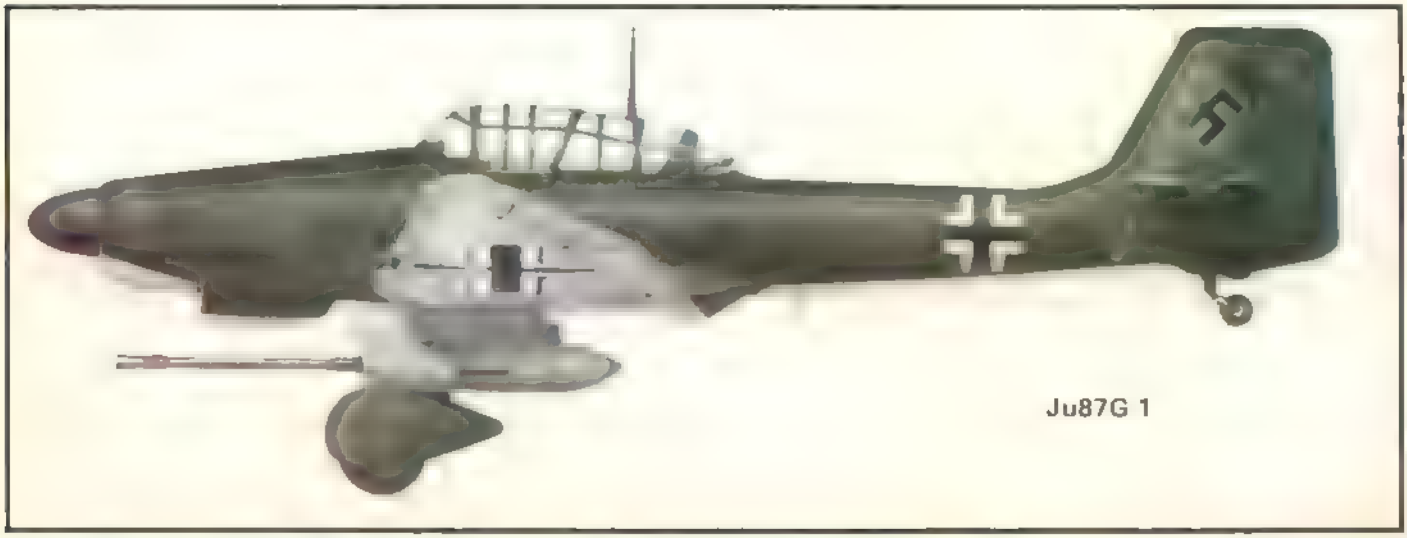
JU87B.2

Sarson, Bryan

The Ju87B 2, an improved B.1, with added ejector exhausts and hydraulically operated radiator cooling gills.

1 Junkers Jumo 211 12-cylinder inverted-Vee
2 Anti-vibration mounts
3 Oil tank
4 Crash-protection padding
5 Self-sealing fuel tank
6 Non-slip walk-way
7 Radio operator's/ Gunner's folding seat
8 Rudder trim tab
9 Elevator mass balance
10 7.9mm MG 15
11 Crew entry step
12 Self sealing fuel tank
13 Inboard flap
14 Dive brake
15 Case and link container for MG 17
16 Port 7.9 MG 17
17 Front spar attachment
18 Wheel spat
19 Undercarriage oleo leg
20 Dive-bombing siren
21 Pilot's cockpit and instruments
22 Bomb sling
23 Radiator
24 Junkers 3-blade VS 11 constant-speed prop
25 Pitch change mechanism in propeller boss

▽ *By 1942 the* Luftwaffe *knew that bombs were not enough to knock out tanks in any number. This led to the introduction of the Ju87G 1, which was no more than a Ju87D.5 to which was added a pair of 37mm Flak (BK 3.7) cannon slung beneath the wing. This Ju87 variant was a highly successful tank killer*



Ju87G 1

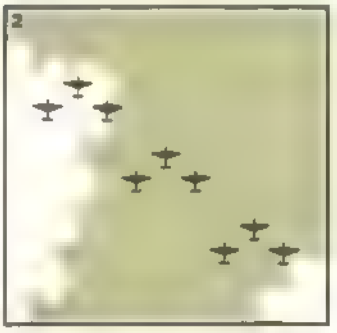
Sarson, Bryan

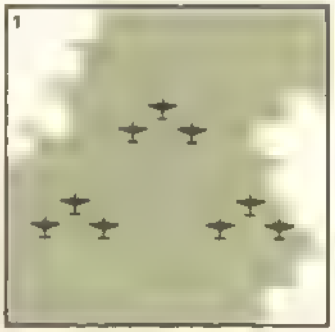
against Poland, the Stukas spearheaded the armored thrusts which broke all resistance. Over 200 Stukas were in the front line at the beginning and the Stuka had the distinction of carrying out the first bombing attack of World War II when Captain Bruno Dilley, leading three Ju87B.1s of *3/St G.1* (*St.G.* is an abbreviation of *Stukageschwader* or dive bomber group) attacked Polish defense works near the Dirschau bridges across the river Vistula. In the afternoon of the same day the Stukas of *Luftflottes* 1 and 4 carried out precision raids on Polish airfields, while those Ju87s from the Naval Training Squadron, *4/186*, co-operated in the bombing of the tiny Polish Navy during two days' intensive operations against Gdynia.

On one battlefield, the enormous difference in the two opposing armies was clearly shown when the Stukas of *1/St G 2*, operating from Nieder-Ellguth airfield, took on a Polish cavalry brigade at Wielum and smashed it completely. On the 9 September, south of Radom, the Stukas of Colonel Gunter Schwarzkopff's *St.G.77* finished off the great Polish attempt to cross the Vistula, crushing the last pockets of resistance in conjunction with the *Panzers*. 'Wherever they went', reported one Stuka pilot after this action, 'we came came across throngs of Polish troops, against which our 110lb fragmentation bombs were deadly. After that we went almost down to the deck firing our machine-guns. The confusion was indescribable'. After three weeks only Warsaw, turned into a fortress by the Poles, held out. The defenders were determined to fight the Germans street by street if necessary The Stukas saved the German Army the appalling casualties such an action would have cost. On 15 September 400 aircraft, 240 of them Stukas, started a continual bombardment of the capital's defenses. Wave after wave of dive bombers dropped their high explosives into the raging inferno stoked by incendiaries dropped by Junkers 52s On 27 September the gallant Poles surrendered

During the long period of the 'Phoney War', the Stukas waited for their chance to repeat the lessons they had learned so well in Poland. The success that these aircraft had achieved surprised the Germans themselves and their propaganda began to broadcast exaggerated details of the

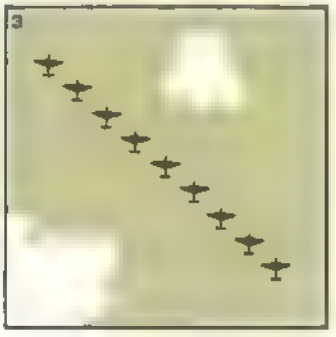
The year 1941 saw the Stuka in its terrible heyday. Here, Ju87Bs fly unhindered on their way back to base Formation tactics are based on a strict adherence to the leading aircraft. Pilots formating keep their eyes on the leader, following his movements exactly

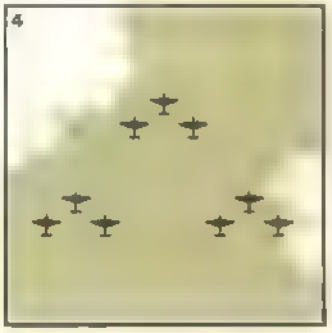




Silhouetted against cloud and ground, the Stuka staffel *is shown (1) on course to its target flying in three* Ketten, *in 'Vee' formation As they approach the target, this changes to triple* Ketten *in echelon to starboard (2) which enables the pilots to move easily into the formation shown in 3*

3 The Stukas now in stepped-up echelon singly to starboard and ready to dive. Followed by their Kettenfuhrer, *they peel off one after the other on a near vertical dive to the target 4 After releasing their bombs and regaining height the* staffel *reforms into formation*





1 and sets course to base ▽ In breaking enemy resistance Stukas worked closely in support of tanks. While the scream of the Stukas' sirens kept the defenders' heads down, the panzers *were able to move into positions for the final overwhelming assaults on bunkers.*

Stuka's capabilities. In this they were aided by the Allies. The Polish Army had been expected to hold out for four months and that fact that they had lasted only three weeks had to be explained. Allied propaganda stressed the role played by the *Luftwaffe* in order to lessen respect for—and fear of—the *Panzers*. The public in Britain and France were not told of the shattering effects that the combination of dive bomber and tank had on the Polish army. They were told of terrible acts of murder committed on fleeing columns of civilians. The Stuka thus became a dreaded weapon of terror when, in fact, its accuracy guaranteed fewer non-combatant casualties than massed level bombing would have caused

Stukas v. RN

In April 1940 the Germans struck north into Norway. With them when the invasion took place was a squadron of the new Ju87Rs of *2/St G.1*, 12 of which were soon operational from Sola airfield near Stavanger The Ju87R.1 was fitted with two external fuel tanks under the wings and the internal fuel tank was modified, giving an improved range of 875 miles with a single 550lb bomb. In Norway the Stukas supported the drive of the Army northward and operated against the warships of the Royal Navy for the first time when they entered the narrow fjords With poor anti-aircraft weapons and no room to dodge, the Royal Navy soon began to take casualties. 'I remember one fellow coming straight at the director regardless of our fire', wrote Commander William Donald, 'through my binoculars I could see popples of flame along his wings. It was only when the bullets whined past us and I saw splinters of steel chipped out of the upper works and mast that I realized the flames came from his own cannon !'

In May 1940 the floodtide of the German *blitzkrieg* broke over Belgium, Holland and France. The main blow came against the French defenses in the Ardennes, on the west bank of the Meuse at Sedan. The ground here was considered impassable to tanks and the likelihood is that well dug-in troops and guns could have halted the *Panzer* offensive. On 13 May General Heinz Guderian waited impatiently with his *Panzers* on the east bank of the river, his massed columns of tanks waiting to cross. Cajus Bekker described the scene: 'Punctually at 1600 there came the drone of engines—the first Stukas. The enemy let off a fierce anti-aircraft barrage as the Ju87s dived down on their targets on the west bank of the Meuse Their bombs crashed into the artillery positions A concrete emplacement burst asunder from a direct hit by a thousand pounder'.

Under such a heavy and repeated pounding, it was little wonder that the second-line French regiments holding the line of the river should have broken so quickly and so completely. As their demoralized columns fled to the rear of their position, the German *Panzers* crossed the river and swept forward deep into the heart of France. Punching through what remained of the crumbling French Army the Germans reached the coast and cut off the British Expeditionary Force. From the beaches of Dunkirk the Royal Navy began to evacuate the exhausted Tommies.

The Stukas were therefore presented with further warship targets and on the few clear flying days of this operation they created havoc among the crowded shipping and wrecked the dock installations. The Stuka pilots were not completely accustomed to attacking ships but they sank several, one of which was the destroyer *Keith* on 1 June. The master of the tug *Cervia* remembered the attack: 'A British destroyer outside of us began to fire at the enemy planes and bombs began to fall near her as she steamed about. At full speed with her helm hard to port nine bombs fell in a line in the water, along her starboard side, and they exploded under water, heeling the destroyer over on her beam ends'. In a second attack *Keith* was turning at high speed when a Stuka planted a bomb down her after funnel. The bomb exploded in her boiler rooms, *Keith* listed 20 to port and stopped, her engines in a shambles. A later attack by Stukas sent her to the bottom

The Stukas were used during the final campaign which saw the surrender of France in June 1940 and were then concentrated on the English Channel coast and refitted pending the intended invasion of Britain. While they waited for this, they were sent, during July, to bomb British convoys in the Channel. They destroyed a large number of coasters and forced the cessation of daylight convoys. Indeed the British risked only small, local convoys in the Channel and Atlantic convoys were routed around the north of Britain. They also sank a number of British destroyers which were standing by to repel the expected invasion fleet

In the next phase, the Battle of Britain, in August, the Stukas were committed early against British airfield and coastal defenses but despite massive fighter protection the *Stukagruppen* were cut to ribbons. The slow-moving dive bombers proved easy prey for the RAF's Spitfires and Hurricanes. The Stukas were particularly vulnerable when they peeled out of formation to commence a dive and when they pulled out of a dive. The Me109 fighter escorts had no dive brakes so they could not dive with the Stukas and they could not provide cover at all levels from the start of a dive to the pull-out. After a few days, during which one unit, *St.G.77* led by Stuka 'father', Col. Schwarzkopff, suffered 40 per cent casualties, it was clear that without air superiority the *Stukagruppen* would be wiped out. They were withdrawn from the battle.

Invasion called off

The Stukas were regrouped in readiness for the actual landing operations but when the other bombers of the *Luftwaffe* met the same fate as the Stuka the invasion of England was called off. While the British jubilantly announced the trouncing of the Stuka and the RAF wrote it off completely, the Ju87s were moving south and establishing themselves on airfields in Sicily. Here, as part of *Fliegerkorps X*, they were given the tasks of closing the central Mediterranean to British convoys and supporting the German and Italian Armies in the desert campaigns of North Africa.

On 10 January the Stukas set about the first part of this task when over 40 of them from *11/St G.2* and *1/St.G.1*, led by Major Walter Enneccerus and Captain Werner Hozzel, made a precision attack on the aircraft carrier *Illustrious* in the Sicilian Channel. For weeks these Stuka units had been training in the coastal waters in order to score at least four direct hits on the armored flight deck of the aircraft carrier, and they made no mistakes. Admiral Sir Andrew Cunningham described this assault on his fleet: 'Formed roughly in a large circle over the fleet they peeled off one by one when reaching the attacking position. We could not but admire the skill and the precision of it all. The attacks were pressed home to point blank range, and as they pulled out of their dives some were seen to fly along the flight deck of the *Illustrious* below the level of the funnel'.

The Stukas hit the *Illustrious* with six heavy bombs and near missed her with another three, all within the space of six or seven minutes Although the aircraft carrier did not sink after this punishment she was put out of action for almost a year. The next day Maj Enneccerus took 12 of his Stukas against the cruisers *Gloucester* and *Southampton*, sinking the latter. The results of these and similar attacks was that it was over two years before heavy warships again ventured south of Sicily and the Royal Navy was forced to set up special areas in the central Mediterranean known as 'no Stuka sanctuaries' where no warships were sent if it could be avoided

In April and May 1941, the Germans invaded Yugoslavia and Greece and again the Stukas paved the way for the very quick victories obtained in these campaigns. Among their successes was the sinking of the old Greek battleship *Kilkis* at Salamis In May 1941, Crete was invaded and a classic duel between warship and Stuka took place. The Ju87s were concentrated on newly constructed airfields at Mulaoi, Argos and Scarpanto and completely dominated

RHL

Two Ju87Bs, 'A' and 'H',—photographed from the third member of their Kette while in close formation. With their dive-brakes closed and radiator cooling gills open, the aircraft are probably pulling out from a dive-bombing attack Attacks in formation generally created tremendous havoc

the battle. On 22 May Lieutenant Colonel Oskar Dinort briefed the crews of *St.G.2* at Molai : 'You cannot fail to find the British fleet,' he told them and, at first light, Lieutenant Colonels Hubertus Hitschold and Walther Sigel led their *Gruppen* into battle. The cruisers *Gloucester* and *Fiji* and the destroyer *Greyhound* were sunk this day, then in the battles that followed the destroyers *Kelly* and *Kipling* went down, the battleships *Warspite* and *Valiant* were hit and the aircraft carrier *Formidable* was badly damaged along with many lesser vessels. The *Formidable* was caught by *11/St.G.2* under Maj. Enneccerus operating from North African airfields.

During June the Stukas were moved north and some 290 of them were concentrated in Col Gen. Bruno Loerzer's 11 Air Corps for the great attack on the Soviet Union, Operation *Barbarossa*. On the 22 June the attack went in all along a thousand-mile front and the Stukas were again to the fore of the battle in the now classic manner—breaking up any Soviet group of strong points that sought to dispute the German advance. So vast was the Russian theater of operations, however, that the Stuka formations had to be constantly switched from one end to the other in order to lead each phase of the assault

By September 1941, the northern thrust had almost reached Leningrad and here the Stukas of *St.G.2* were given the hard task of silencing the guns of the Soviet fleet at Kronstadt Led by Major Oskar Dinort and flying the new Ju87D with a special bomb, a 2,000lb weapon for use against the two battleships the Russians had based there, the Stukas made attack after attack through intense flak.

Attack on Marat

Between 23-28 September, the Stukas made assaults twice a day on this fleet and had the satisfaction of causing heavy damage to the battleship *October Revolution*. Captain Steen's blue-nosed Stuka was hit by flak and he died, crashing his aircraft into the heavy cruiser *Kirov*. The battleship *Marat* was hit by a heavy bomb and broke in half The pilot responsible was Lieutenant Colonel Hans Ulrich Rudel. He described his attack : 'The ship is centred plumb within my sights. My Ju87 keeps perfectly steady as I dive ; she does not swerve an inch. I have the feeling that to miss is impossible Then I see the *Marat* large as life in front of me Sailors are running across the deck, carrying ammunition Now I press the bomb release switch on my stick and pull with all my strength. I see nothing, my sight is blurred, in a momentary blackout, a new experience for me. I hear Scharnovski's (his observer) voice : "She is blowing up!" '

Despite the victories the Stuka helped produce in Russia, the German advance stopped at Leningrad and all along the front the winter of 1941 halted the onward roll of their armor During 1942 the Stukas saw considerable service in the advance into the south of Russia and were prominent in the taking of Sebastopol in the Crimea. They also took part in the long assault against Stalingrad in September Here the German and Russian positions became so intertwined that the Stuka pilots had to attack map in hand with each street and house clearly marked

Stukas in support

In other theaters of the war Stukas were used with great effect in support of Field Marshal Erwin Rommel's North Africa offensive in June 1942, which took Tobruk. In a key attack against the fortress of Bir Hakim, it was non-stop bombing by Col. Sigel and his cobra-marked Stukas of *St G 3* that led to its fall These Stukas based in the Mediterranean also inflicted severe casualties on convoys sailing to Malta during 1942. The climax of these attacks, which also involved Stukas flown by Italian pilots, was the dive bombing by *1/St.G 3* which crippled the aircraft carrier *Indomitable* in August 1942 during Operation Pedestal, the largest Malta convoy.

Now, Allied defenses, both ground and aerial, were beginning to harden and operations by the Stukas in their conventional form were becoming more and more costly During 1943 the Ju87 almost vanished from the sky over

. Five Ju87D.1s in echelon to starboard, and accompanied by a fighter escort of two Me 109s, while flying on a course to target somewhere on the Eastern Front. One Me 109 has its tailwheel retracted The Stukas are ready to pounce on any Russian armor after being called in by radio

the Mediterranean save for the Balkan theater, but continued to be usefully employed in Russia as a tank-buster. A notable development here was made by Col. Rudel who had his Stuka adapted by mounting a 37mm cannon under each wing, instead of bombs. Although this made the aircraft rather more unwieldy in the air, with correct use and good training it proved to be a deadly weapon against tanks and other hard-skinned vehicles Rudel himself was credited with the destruction of no fewer than 1,000 Soviet armored vehicles, from T34s downward, with this *Kannonenvogel* ('gun bird') which was used for the first time at Kursk in July 1943

In the Mediterranean, the Stuka had its last conventional victory during the Aegean campaign of October and November 1943 when, once more pitted against warships of the Royal Navy, it inflicted further heavy casualties. On the rare times that US long-range Lightning fighters put in an appearance however *St G.3*, working from Rhodes, took prohibitive losses

By 1944, however, the Stukas in use on both the Eastern and Western fronts could only fly almost suicidal operations during the hours of daylight, and after the summer they were restricted, at least in the west, to flying night missions only Special *Nachtschlacht* units were set up to fly Stuka sorties over advanced Allied troop positions at night. Operating from Wormditt airfield these Stukas were equipped with the 25A radio set which enabled them to be homed onto their pre-selected targets by the mobile transmitters of the *Egon* units close to the front. Their targets were troop concentrations, artillery positions and tanks. The bombloads of these Stukas included fragmentation and incendiary bombs as well as high explosive. The targets were identified by beacons, tracer and flares and the Stukas reached the bomb delivery points solely by dead reckoning (DR) navigation.

Nachschlacht Stukagruppen 1 and 2 were led by Major Miller and Captain Wilberg and were particularly active in the Nijmegen area of Holland during October 1944. These night intruder Stukas flew as many as five sorties a night and the strain on the crew was immense. It was all in vain and the final large-scale Stuka mission was an operation by 50 of them in the Oppenheim area on the night of the 23-24 March 1945.

On the Eastern Front Rudel and the Immelmann squadron was still operating a few Stukas by day. Indeed Rudel, just before the end of the war in May 1945, volunteered to fly his Stuka into Berlin and rescue Adolf Hitler from the Soviet armies. 'I suggest that I should land this morning by daylight', he informed his superior von Below, 'on the east-west arterial road. I think it can still be done if I use a Stuka.'

His suggestion was not taken up. With the end of the fighting in May 1945, the only Ju87s left, other than the Immelmann squadron, were lying abandoned on airfields in Bavaria. Thus ended the legend of the Stuka dive bomber, an aircraft that was initially feared and hated for its effectiveness. It was mocked and written off during the Battle of Britain. But it served in the front line throughout the entire war, destroyed more warships and armored vehicles in the field than any other German aircraft and became one of the most famous Axis aircraft of World War II.

Peter C. Smith

This Ju87D, clad in desert camouflage, is en route to attack The aircraft is wearing the 'Scottish Terrier' emblem of Stukageschwader *2 Under the starboard wing are anti-personnel bombs, their long 'antennae' projecting well forward.*

US Army

RHL

ANZIO ASSAULT

German determination and Allied lack of trust ruined an operation rich in promise

Troops of the US 6th Corps meet little opposition as they wade ashore during the first day of the Anzio landings. Caught by surprise at first, the Germans brought in reinforcements of crack troops in the hope of smashing the beach-head

The little Italian port of Anzio was the scene, in early 1944, of one of the great 'might have been' battles of World War II. Like Arnhem which might have ended the war in the west in September 1944, or Army Group Center's offensive in August 1941 which might have defeated Russia in the first four months of Operation Barbarossa, Anzio might have broken the costly stalemate of the Italian front before mid-summer of Invasion year, captured Rome, 33 miles to the north, and driven the Germans deep into northern Italy.

This single stroke would have released vitally needed shipping for the D-day operation, brought the Allied bombers closer to their targets in southern Germany and outflanked German positions in the Balkans, one of her major sources of oil and mineral supplies. It would have also dealt a considerable blow to Hitler's prestige and almost certainly cost him a major part of the very large force he maintained in southern Italy to keep the Allied Mediterranean Expeditionary Force at bay. Anzio, in fact, achieved none of these things. Why was the operation, so rich in promise, so empty of fulfilment?

In the early winter of 1943, the Allied armies, landed near Naples in September, were brought to a frustrating halt in the mountains south of Rome. They had run into exceptionally difficult terrain and an unexpectedly severe winter of rain and snow. The Germans also presented problems—there were more of them than the Allied High Command had anticipated and they had built a belt of fortifications, the Gustav Line, which, with the advantages of climate and geography, gave a coherency to their defensive line.

The only progress made by the Allies' two armies, the American Fifth on the Mediterranean coast and the British Eighth on the Adriatic, was by set-piece assaults on strongly-defended river lines. These were time-consuming to prepare and costly to execute. Since they had run up against the heavily-fortified and well-manned Gustav Line, in early November, they had made virtually no progress at all.

It was against this background that plans for a seaborne invasion behind enemy lines were formulated. The Allied High Command realized that their earlier belief that the Germans would withdraw into northern Italy if heavily pressed was mistaken. General Dwight D. Eisenhower and General Sir Harold Alexander concluded that the enemy's current strategy of making the Allies win Italy inch by inch could be countered only by a seaborne landing in their rear. Alexander, in a directive dated 8 November 1943, laid down a timetable for such an operation: it entailed a triple offensive, first by the Eighth Army to attract German reserves onto the Adriatic coast, then by the Fifth to set the campaign again in motion towards Rome and finally by an amphibious force, landing near Rome, and linking up with the Fifth across the river lines of the Mediterranean coastal plain. .

The plan was orthodox—but the means to execute it were not immediately available. The plan demanded ships—but shipping was needed for the coming Normandy invasion and had been directed to leave the Mediterranean forthwith. Troops were needed—but the necessary divisions were also wanted for Normandy. They had begun to leave and had not yet been replaced by the Free French Army which was training in Africa. The plan, code-named Operation Shingle, was, after a feasibility study, therefore shelved. But it was not forgotten. As the winter fighting increased in severity, and apparent futility, the idea of a seaborne descent near Rome came to appear more and more attractive to the protagonists of the original plan, notably Alexander and the British Prime Minister, Winston Churchill.

On 22 December, Shingle was officially cancelled; but on the following day Churchill insisted that it be reconsidered. As the author of the heart-breaking Gallipoli failure of World War I, Churchill's credentials to oversee a revived Shingle did not bear close examination. But he could well

Imperial War Museum

· A British Sherman tank splashes into the shallow waters of 'Peter Beach'
▷ Defenders of the Gustav Line study maps of Italy. General von Vietinghoff, commander of the whole cross-peninsula defense line, is on the left and General von Senger und Etterlin, 14 Panzer *Corps commander, is on the right*
▷▷ The Anzio assault. The seaborne invasion behind the Gustav Line was designed to break the grim deadlock in the peninsula, lead to the fall of Rome and drive the Germans deep into northern Italy. This would have released Allied shipping for the D-Day landings, outflanked Hitler's Balkan positions and brought Allied bombers closer to their targets in southern Germany. In fact the beach-head became a stalemate and, according to German propaganda, a 'Death's Head'

argue, if anyone had drawn the parallel, that the Allied position in the Mediterranean was far more favorable in 1944 than in 1915, and that while the objectives Shingle proposed were more limited than those intended at Gallipoli, the investment required was proportionately more limited.

He could and did argue that Shingle made excellent military sense—if only by contrast with the fighting along the narrow mountain roads and hidden defiles to which their current strategy condemned the Allies. There they were unable to disguise either the timing or the direction of their strokes and could gain little advantage from their air superiority. A seaborne movement offered the chance to surprise the enemy both in space and time, and to force him into battle on the naked plain, while supplying themselves plentifully along the broad highway of the Mediterranean. If the enterprise were successful, moreover, it would give them Rome, put the Balkans under threat and perhaps—and here the argument became speculation—even make Operation Overlord, the invasion of Normandy, unnecessary.

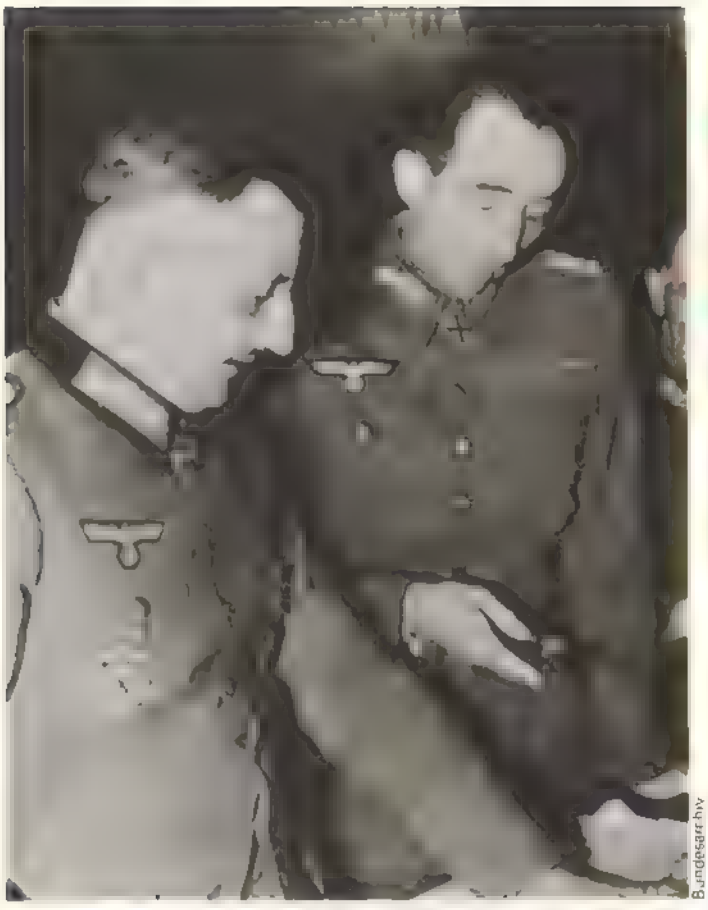
It was vital, if Shingle was to work at all, to delay the transfer out of the Mediterranean of the necessary shipping. By direct intervention with President Roosevelt, Churchill secured the retention, first until 15 January, then until 5 February, of 68 Landing Ship Tanks (LSTs), the basic requirement of a seaborne landing. As planning proceeded, Churchill made further requests for logistic supplies and secured them. At the same time he ensured that there was no wavering in the enthusiasm of Gen. Alexander, Army Group Commander, and of Lieutenant General Mark Clark, the American Fifth Army Commander, two of the three men who had chosen Anzio for the invasion point.

In fact, this was unlikely for both had strong, if different, personal motives for wishing the operation well. Alexander, disappointed that Eisenhower, rather than himself, had been appointed Supreme Commander, was resolved that the struggle for Italy should not become a stalemated sideshow—and, without Shingle, it threatened to become just that.

Gen. Clark, who felt that his Fifth Army had not been given the credit its achievements deserved, ached for the glory of capturing Rome. His American and British divisions, now pinned to the river valley floors by fire from the heights of the Monte Cassino range, were 100 miles short of the capital. He counted on Shingle to release them from the stalemate of the plains below Monte Cassino. Seventy miles separate Anzio from Cassino, and Clark thought that, given determination, the launching of concentrated offensives from the two spots should break the German defense on the west coast and lead him into Rome.

This was Churchill's hope and, having secured the necessary equipment for his commanders, he left them to put the plan into action. But the translation of military decisions into effect always reveals unanticipated difficulties. The preparation of Shingle was no exception. Further staff study suggested that the Germans would probably react strongly to the initial landing and that a two-division landing, for which Churchill had had to commit his personal prestige to find the shipping, might not survive the onslaught. Further shipping, and more men, had to be found to land with three divisions.

The final order of battle, therefore, included, besides the British 1st and American 3rd Divisions, the American 45th Infantry and 1st Armored Divisions, as well as members of American Parachute and Ranger and British Commando battalions. The whole was to be subordinate to a Corps headquarters—the US 6th Corps. This was debatably too small to handle the operations of a force though it had



grown from the initial planning figure of 24,000 to a final 110,000. Doubts also emerged about the efficiency of the force itself. At a dress-rehearsal in Naples Bay, both the 1st and 3rd Divisions mishandled their equipment, losing 40 DUKWs (the amphibious lorry on which cross-beach mobility depended) and two batteries of 105mm howitzers, while the naval parties operating the landing craft made a series of unnerving mistakes. It was not a happy augury.

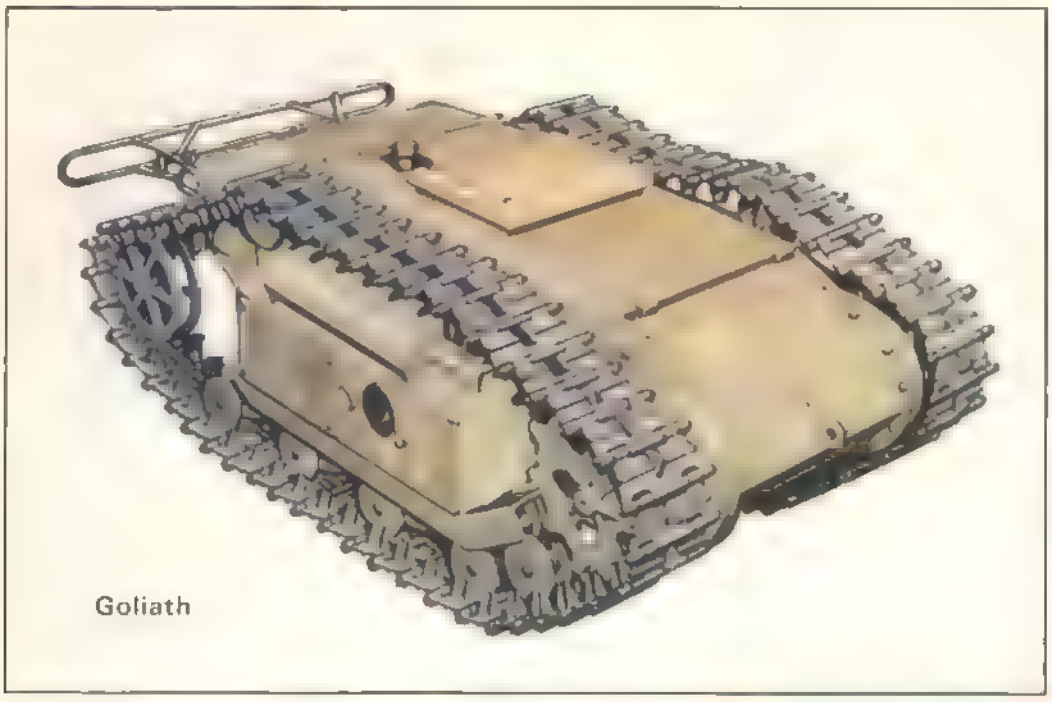
These events badly worried the already anxious commander of 6th Corps, Major General John R. Lucas. An experienced and respected soldier, Lucas was not happy with the Anzio idea and expressed his doubts strongly and continuously in the pages of his diary. He described himself as unusually tender-hearted for a general in an army which traditionally took a blood-and-guts attitude to the prospect of casualties and he feared he was leading, or worse, sending, his men to their deaths.

Hence his growing obsession, which the weeks of preparation made more and more apparent, with reinforcement and re-supply considerations. It was vital, in his view, that the men in the beach-head should have ashore with them the largest possible quantity of armored vehicles and artillery pieces as well as ammunition and petrol. Given these, and air support, the beach-head troops would be able to repel a counter-attack, which Lucas expected to come swiftly and in strength, despite the different story from Allied Intelligence.

His superior, Mark Clark, an abler man than his posturing suggested, was sensitive to Lucas's anxieties, which to some extent he shared. Consequently, he refrained from giving Lucas the additional responsibility for a decisive breakout from the bridgehead. The orders Clark issued to 6th Corps were for 'an advance on' the Alban Hills—the feature which commands the land between Anzio and Rome —not for an advance 'onto' This ambiguity gave Lucas the option of halting his troops short of the objective if he felt that the strength of enemy reaction threatened his beach-head

The Germans were also making their plans The *Luftwaffe* Field Marshal Albert Kesselring had been preferred to Field Marshal Erwin Rommel for the post of Commander-in-Chief in Italy because of his optimistic and generally correct forecasts of the way events would go in the peninsula Kesselring was aware that, over a distance of several hundred miles, both his flanks were vulnerable to amphibious assault. He suspected, however, that the coast near Rome was the most likely spot for the Allies to choose, and he accordingly kept two divisions in reserve nearby. They were divisions he could hardly spare, for his armies were at full stretch on the Gustav Line, the cross-peninsula German defense line from which, Hitler had ordered, there was to be no retreat. He was aware, moreover, that even this reserve might not be sufficient to contain a landing, for the Allies might outnumber it before reinforcements, which could only come from southern France, the Balkans and the far north of Italy, had arrived

On 18 January, and only after receiving the firmest assurances of the unlikelihood of an Allied landing in the near future, from his own and higher Intelligence sources, he agreed to send his two reserve divisions from Rome to Cassino, where Clark's Fifth Army had just succeeded in forcing the line of the Garigliano. General Heinrich von Vietinghoff, commanding the Tenth Army, had represented this breach of his sector of the Gustav Line as potentially catastrophic, for it threatened to outflank the Monte Cassino position on which the whole line hinged. Kesselring was



Sarson/Bryan

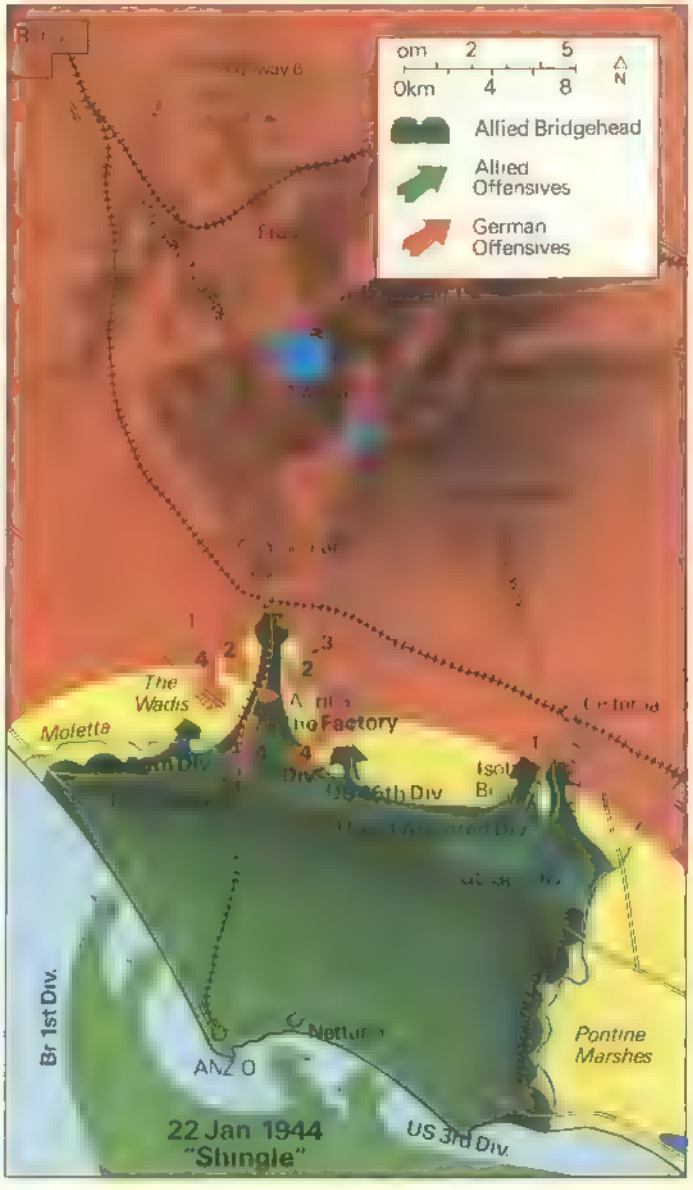
A remote-controlled miniature tank, 'Goliath' could deliver a 200lb charge, detonated along a 200ft wire. Goliath was 5ft 9in long and 2ft high and was designed to afford a cheap way into an Allied position. Their maximum speed of only 6mph made them vulnerable to small-arms fire. The weapon performed disappointingly, all 13 Goliaths used against British positions at the 'Flyover' became bogged down on the approach

7 (1) Allied offensive from 30 Jan. to 3 Feb. followed by (2) German counter-attack and offensive (3) on 7 Feb. to retake Aprilia—prelude to a huge 16 Feb. assault (4) involving 10 divisions

persuaded by his entreaties. What neither appreciated was that Clark, though delighted by this local success, had planned it precisely as a means of clearing the Anzio area of anti-invasion forces. Once Lucas was ashore Clark then intended to launch a major offensive from the Garigliano bridgehead directed towards Anzio, the Alban Hills and Rome. The Germans in between, if the strategy proved right, would flee or surrender to the pincer attack.

Thus Lucas, thanks to an excellent stroke of strategic deception by his own commander, and to the enemy's faulty intelligence, was to enjoy the most precious advantage an amphibious force leader can obtain—total surprise. His fleet of 240 landing craft and 120 warships made an undetected overnight passage northwards from Naples. In the early morning of 22 January 1944, they began to unload the two assault divisions—1st British, 3rd US—on beaches left and right of Anzio without interruption from the enemy, apart from some light, unco-ordinated cannonading by a few, soon-silenced, batteries. By midnight nine-tenths of the assault force (36,000 men and 3,000 vehicles) had come ashore for a loss of 13 dead, and had established a perimeter between two and three miles inland. The Allied air forces had flown 1,200 sorties, but had not been opposed. The port had been captured intact and was now ready to receive supplies from the fleet which swung untroubled at anchor offshore.

Lucas felt, and rightly felt, that he had done well. Indeed as landings go, the first day at Anzio must be regarded as an impeccable exercise in that particular tactical form. But success did not dispel Lucas's anxieties, for he now feared a major enemy counter-blow. Rather than cripple the expected counter-attack by seizing commanding terrain features and communication centers inland, he redoubled his concentration on building up his base and perimeter defenses. For the next few days the American 3rd Division pushed cautiously inland, the British 1st Division, on its left rather more boldly. But both failed to reach their obvious objectives, Campoleone and Cisterna, from which an advance on the Alban Hills must start; and neither was urged onward with any fervency by Lucas. He was now



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△ *Veterans of the 4th Parachute Division race south to reinforce the German lines at Anzio.*
▷ Luftwaffe *Field Marshal Albert Kesselring, German CinC in Italy*
▽ *After sticking his neck out over the landings at Salerno, General Mark Clark (left), commander of the American Fifth Army, approached the Anzio invasion with caution. Under the command of Major General Lucas the Allied forces failed to advance. Lucas was replaced, a month after the landing, by his subordinate, Maj. Gen. Truscott (right), who eventually achieved the link-up with the other Allied forces after the fall of Cassino.*

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directly under the eye of Clark, who had come to see the bridgehead for himself. But even the presence of his superior could not stir him to action, though his diary reveals that it rattled him. When he was ready, he wrote, he would move. He thought he would be ready by 30 January.

Unfortunately for the Allies, the Germans were ready also. If there was one thing at which their staffs had always excelled, it was the rapid improvisation of defense and counter-attack, and this war had given them all the practice they needed at perfecting their procedures. The landing had badly frightened them—Vietinghoff was so alarmed that he had begged Kesselring for permission to withdraw from the commanding Cassino position. But *Oberbefehlshaber* (CinC) Kesselring was not prepared to fall for Clark's ploy and had kept his nerve. He called up his *Alarmeinheiten* and settled down to win the build-up. *Alarmeinheiten* were 'paper' units, formed from clerks, drivers and men returning from leave and all German headquarters had plans to form such units in an emergency. German headquarters in Rome sent several of these units to the beach-head in the first day.

Meanwhile Kesselring called for better units to replace them. From the north of Rome came the 4th Parachute and Hermann Goering *Panzer* Divisions, from southern France the 715th Division, from the Balkans the 114th, from northern Italy the 92nd, 65th and 362nd Divisions and the 16th SS *Panzer* Grenadier Division. From the Gustav Line, which Kesselring insisted should be thinned out, came the 3rd *Panzer*, the 1st Parachute and the 71st Divisions. Not all of these were destined for Anzio. Kesselring had two crises on his hands, the Anzio beach-head and Cassino, and needed a surplus of units with which to juggle his way to stability. By 30 January, he had extracted sufficient force from these newly-liberated reserves to have sealed off the Allied bridgehead and to be contemplating his own counter-offensive, which he had scheduled for 2 February.

Lucas's methodical preparation of his offensive had thus ensured the conditions which would bring about its failure. For his postponement of the capture of Cisterna and Campoleone had not only allowed the Germans to build up opposition on the commanding ground of the region; it had

also betrayed to them what would be the thrust of his eventual attack. If he had taken these two places, his forces could have moved north-west, north or north-east. Cramped within his original bridgehead, with the coast on his left and the impassable inundations of the Pontine Marshes on his right, he could only attack straight ahead, due north. There the Germans sat and waited for him.

Lucas planned his H-hour, the attack time, for 0200 on 30 January. This timing gave his infantrymen some advantage for darkness covered the movements of the Ranger force he sent along the dry bottom of the Pantano ditch towards Cisterna. But it also concealed the Germans assembling stealthily to ambush them. Of the 767 Rangers who set out on this commando penetration only six returned to the Allied lines. Their comrades of the 1st and 3rd Armored Divisions, following up in a conventional assault, suffered fewer casualties but nevertheless met desperate resistance and, after an advance of three miles in three days, which brought them near to the vital Highway 7, were forced to a halt. Only in the British sector was there promising progress. Here the veteran 1st Division had launched its attack from the positions it had won a week before near Aprilia. (These were 'The Factory', as the Allies termed the Fascist model farm at Aprilia, and 'The Flyover', a road bridge which carried a minor road over the Anzio-Campoleone road.) But it was made at a dreadful price.

The countryside beyond the roads was a maze of gullies or 'wadis', and these denied protection to the flanks of 3rd Brigade, attacking up the Anzio-Campoleone highway. Its three battalions suffered crippling casualties as a result; one, the 2nd Sherwood Foresters, was almost completely destroyed in the final assault on Campoleone. 'There were dead bodies everywhere', wrote an American visitor to the scene, 'I have never seen so many dead men in one place. They lay so close I had to step with care'.

'Dead bodies everywhere'

Though the offensive of 30 January to 3 February was a failure, in that it cost much for little, fell short of a break-out and further depressed Lucas at a time when buoyant leadership was becoming vital to the beleaguered invaders, it did achieve some positive gains for the Allies. It had inflicted heavy losses on the Germans, who had no way of suppressing the fire of the Allied fleet or of chasing off the Allied air force, and had no real answer to the enormous weight of artillery the Allies could always deliver. Both the British 1st and American 3rd Divisions had penetrated Kesselring's main line of resistance; and the upset they had inflicted forced him to postpone the planned 2 February offensive.

The Allied assault had averted a German offensive designed to obliterate the Anzio beach-head and sweep the Allies into the sea. But if it had avoided another Dunkirk, Colonel General Eberhard von Mackensen, whose Fourteenth Army Headquarters Kesselring had brought down to oversee German operations at Anzio, was determined not to let the Allies consolidate. He inaugurated the first of a series of minor attacks, beginning on 3 February, and chiefly aimed at the British Campoleone salient. All of these were designed to win the ground necessary for a major counter-blow. He was unable to shift the British on 3 February but kept them subjected to fierce pressure which, the next day, drove them out of most of their salient. On 7 February, Mackensen attacked towards 'The Factory' and nearly took it. On 9 February he got possession of Aprilia village but failed to take 'The Factory'. It fell next day, was re-taken by the British in a counter-attack, and only passed finally from their hands on 11 February.

The British 1st Division had now lost half its strength, which, as always in a stricken infantry formation, meant much more than half its infantrymen. A fresh British division, the 56th, had landed but it was needed elsewhere in the line and could not relieve the 1st and much of its front was, on Lucas's orders, taken over by the American 45th Division with the aim of fighting the Germans out of Aprilia. Lucas seemed to have little fight left in him. Badgered by his superiors, Mark Clark and Alexander, who were frequent visitors to the beach-head; menaced by the appointment of a deputy commander, Major General Lucian K. Truscott, whom he suspected of being kept ready to supplant him, and more distressed than ever by the losses his men were suffering, Lucas busied himself in supervising the preparation of a 'final beach-head line' of strongpoints, roughly following the perimeter of 24 January.

In the coming days the men at the front, who were also frantically strengthening their tactical positions, were to feel grateful for the sense of refuge the final beach-head line offered, for on 16 February Mackensen unleashed his long-prepared offensive. There were two thrusts to the assault. The first, against the British 56th Division on the west bridge-head, was by 4th Parachute and 65th Divisions. The other, and main attack, by 3rd *Panzer* Grenadier, 114th and 715th Divisions, with 29th *Panzer* Grenadier and 26th *Panzer* Divisions in support, was down the now dreadfully familiar axis of the Campoleone-Anzio road. It was spear-

Roman triumph German-style. US prisoners, captured in the fighting around Anzio, are paraded past the monument to Victor Emmanuel II. This was all part of the intensive German propaganda campaign about Anzio—but a soldier at the head of the column shows that he is not impressed.

headed by a unit chosen specially for the task by Hitler—the *Infanterie Lehr* Regiment. Successor to the *Lehr* Regiment of the Kaiser's Guard, and brother to the mighty *Panzer Lehr* Division, the regiment looked, and thought itself, invincible. In fact, the only activity it was accustomed to were military displays and demonstrations in Germany. It was inexperienced and over-confident. Exposed to the defiant resistance of the American 45th Division, astride the main road, the Nazi regiment suffered heavy casualties and its discipline broke

Equally disappointing—for those like Hitler, who believed in fancy solutions to old-fashioned military problems—was the performance of the 'Goliath', a remote-control miniature tank. Each of the 13 such tanks used in the attack carried 200lb of explosive at 6mph for a maximum distance of 2,000ft. It was supposed to open a cheap way into an enemy position. All bogged down on the approach; Allied fire destroyed three, the rest were dragged ignominiously back to base

But these two reverses were compensated by substantial German successes on 16 February. Although unable to deploy their tanks off the road, just as the Allies had been unable to do during their offensive, Mackensen's divisions had inflicted substantial loss on the British 56th and American 45th Divisions and driven both back. Behind one of their rare air bombardments they continued their attacks during the night, and attacked again early next morning down the main road. A further air raid in mid-morning aided their advance, and by noon they had secured a salient two miles deep and one mile wide in the 45th's front. They were now only a mile from Lucas's 'final beach-head line'. But the Germans could get no farther. Lucas found reinforcements, which included the battered British 1st Division, and with the help of these troops the 45th held out.

The Germans, by the end of the day, had suffered such heavy losses in their engaged infantry battalions, which were down to a rifle strength of 150 to 200 men, that Mackensen persuaded Kesselring that he could only continue if allowed to commit his *panzer* reserve—26th and 29th Divisions Kesselring, though not optimistic, agreed. They attacked next day, 18 February, and managed to enlarge the breach considerably. Then they ran into a carefully prepared fire-trap laid on by a 'grand battery' of 200 Allied guns. Five times the Germans tried to break through the barrage that the battery laid around the Flyover on the Anzio road but each time their formations were broken up and driven back. Still they rallied to attack again in the afternoon and only the committal of final Allied reserves from Anzio, and more self-sacrifice by the 45th and 56th Divisions, turned back the assault

The Germans had very nearly broken through on the afternoon of 18 February and Mackenson continued to attack, at a lower intensity, for the rest of the month. But after 18 February both he and Kesselring accepted that their offensive must end. With the cessation of the great Allied attack on Cassino on 13 February, the reason for the German offensive had gone. They had also, with 5,000 casualties in five days, run out of troops and supplies were low.

The Allies too had suffered heavy losses in men. But their supply line, though occasionally interrupted by the new German radio-controlled glider bomb—most spectacularly when the ammunition-ship *Elihu Yale* was blown up—was never broken and continued to provide ammunition in a quantity the enemy could not hope to match. Profusion of ammunition, after stark bravery, was the principal reason for the

Defeat, captivity—and abuse. Dejected German prisoners feel the wrath of an Italian civilian as they tramp across the coastal plain. The Germans suffered heavy losses during the mid-February counter-attack and they were forced to abandon any hopes of driving the Allies back into the sea

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Allies' survival in the beach-head. After 20 February the German commanders tacitly accepted that the continued existence of the beach-head was a situation they would have to live with

For the Allies, however, mere survival fell rather short of a victory. It was enough to satisfy Lucas, but not his superiors who, in the aftermath of the German winter-offensive, promoted him out of his command and into obscurity. With his departure, and the Germans' exhaustion, the beach-head relapsed into a lethal slumber. Maj. Gen. Truscott, who could have won the ground Lucas dared not grasp for, was ironically compelled to oversee a prolonged period of siege-warfare--something for which his predecessor was perfectly fitted

Yet perhaps it was still not Lucas's sort of battle. For despite the lack of movement on either side, Anzio remained a place of death, the death of young soldiers whom Lucas had cherished more deeply with each day of battle. And the deaths they were to suffer, in this gentle Italian landscape, warming to the spring, were those of a different war in another country—the deaths of soldiers of World War I in the trenches of Flanders. For at Anzio, as at Ypres, the lines ran within grenade-throwing distance of each other, and men spent their days, throughout the 'lull' of March, April and May, pressed against the earth walls of their bunkers, listening for the distinctive discharge noises of short-range weapons and bracing themselves to withstand the shock of the explosion. Rest, when it came, took tired units no more than three or four miles from the line where shelling, which at least they were spared 'up front' by their proximity to the enemy, was a constant harassment and killer

There was also the German propaganda barrage. Its message meant nothing to many soldiers; to others it was demoralizing and provocative. Radio broadcasts from Rome warned of the danger and horror of further fighting and encouraged desertion. Leaflets fired over in shells alleged unfaithfulness on the part of wives and girlfriends at home—leaflets for the British troops spoke of English girls enjoying themselves with the Americans encamped in 'Merry Old England' while, for the American soldiers, the villain was the archetypal Jew. One of the most effective leaflets carried the chilling legend, 'The Beachhead has become a Death's Head' and showed a map of Anzio over which a skull was superimposed

All who survived the 'lull' at Anzio testify to the tension, caused by constant alarms and persistent sense of claustrophobia, they experienced within the perimeter. When orders came, on 23 May, to break-out and meet the spearhead probing north from Monte Cassino, they were greeted with the sort of genuine enthusiasm soldiers rarely accord the

One of the 'prizes' of war the bombed-out town of Cisterna The town lay directly in the path of the January break-out from Anzio but only after four months of bitter fighting did the Allies capture the ruined, bomb-shattered town

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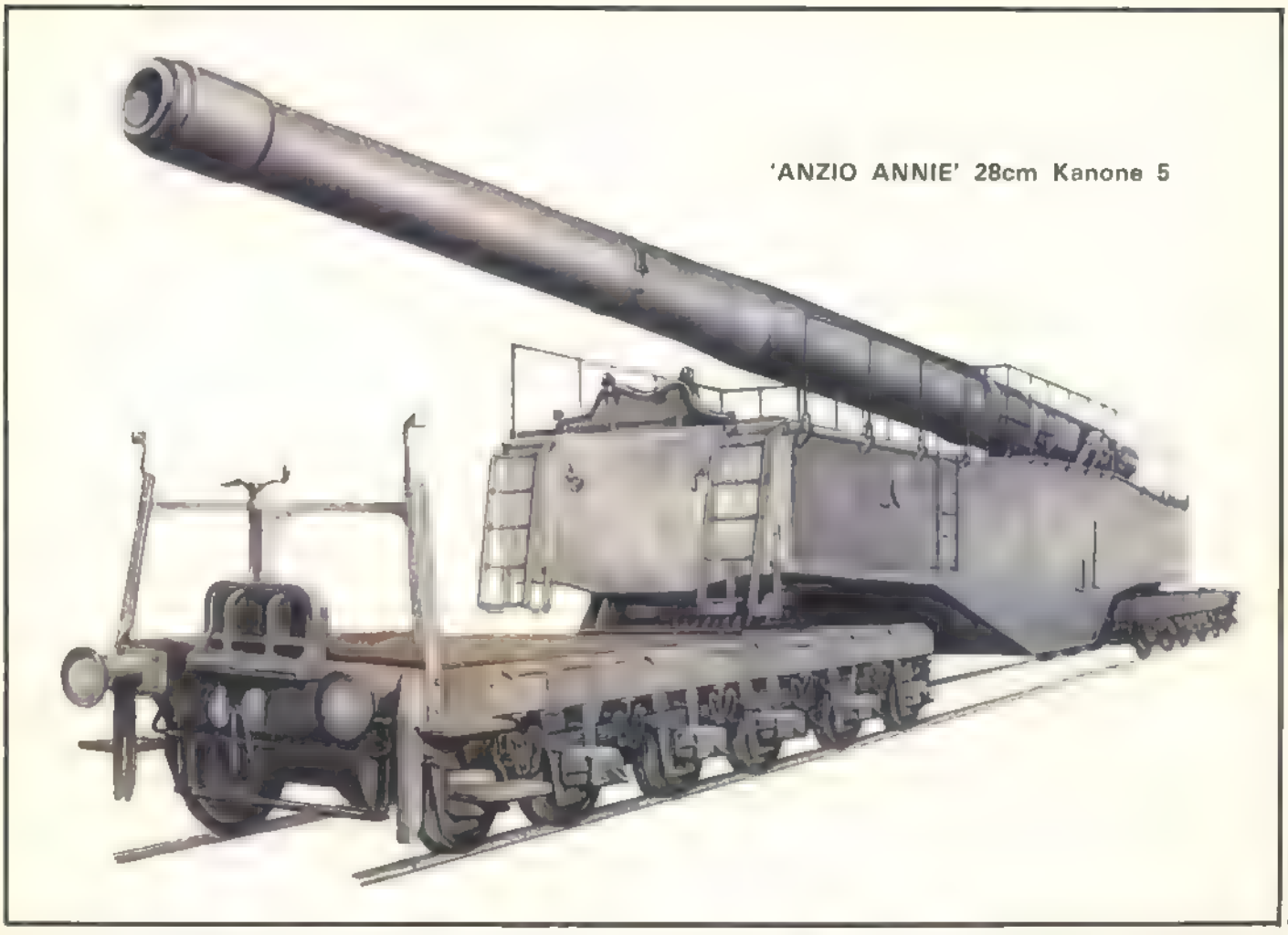

'Anzio Annie', alias 'The Anzio Express', two nicknames the Allies gave the 28cm Kanone 5 *rail gun with which the Germans bombarded the Anzio beach-head The gun was 96ft long and fired 560lb shells to a maximum range of 38 miles*

prospect of risk. The Allies had been too long at Anzio. It had proved no short-cut from the path to Rome.

Ought Anzio to have worked? Mark Clark thought so; Alexander thought so; Churchill continued to think so, long after the war's western focus of effort had moved out of the Mediterranean. Were they all wrong? It depends whether one wants a tactical or strategic answer to the question. Tactically, there seems little doubt that Lucas might have seized the high ground between the beach-head and Rome —the Alban Hills—had he pressed on hard from his perimeter in the first three or four days after the landing. But equally there seems little doubt that to have pressed on farther, to Rome itself, would, even though the city lay temporarily undefended, have resulted in the destruction of his Corps.

Hitler's snap judgement about Anzio was that it betrayed an Allied reluctance to risk a cross-channel invasion and he was willing in consequence to release reserves from much farther afield than usual to crush the landing. Given this reaction, Lucas's caution looks justified. But, his critics argue, bolder action would have frightened the Germans into thinning out the Cassino front which, in turn, would have heightened the chance of the Allies breaking the Gustav Line and dashing to his rescue.

That argument shifts the debate from the tactical to the strategic level. Its validity is dubious also—Cassino and Anzio are so far apart (about 70 miles) that the two Allied forces, given their strength relative to each other and to the enemy's, could not mutually assist each other. A much stronger punch at Cassino, a much bigger landing at Anzio, a weaker Tenth Army, a slower, smaller reinforcement by Hitler—any of these would have turned the trick for Mark Clark, Alexander, Churchill, perhaps even for the depressive Lucas. But these alterations in the strategic equation presuppose a major revision of priorities in the Allied plans for the conduct of the war in 1944. Not only was there no such revision but American opinion, at the highest level, was rockfast against it.

Roosevelt and Marshall were determined to transfer the focus of Allied war-making out of the Mediterranean and into Normandy, agreed to Anzio with bad grace and resolved to concede it with no more than would pacify Churchill. Given their attitude, the 70 miles between Cassino and Anzio were unbridgeable by any Allied effort. Hitler's hopes and fears—fears that he might be about to lose both the Balkans and Italy; hopes that a brutal extinction of the Anzio beach-head might deter the Allies from risking a landing elsewhere—determined that the Germans would give Lucas and Mark Clark no help either. It was this combination of enemy determination and Allied lack of enthusiasm which robbed the Anzio operation of its chance of success and made the subsequent battle so terrible.

John Keegan

JANISSARIES

'The body of a Janissary is only a stepping stone for his brethren into the breach itself'

Kneeling before the Muslim prophet Haji Bektash, Kara Khalil together with a thousand young Christian slaves received a blessing: 'The troop which thou has created shall be called *Yeniceri*: their faces shall be white and shining, their right arms shall be strong, their sabres keen and their arrows sharp. They shall be fortunate in the field and they shall never leave the battlefield save as conquerors.' Kara Khalil was commander of the Janissaries, the first regular standing infantry force in 14th century Medieval Europe. It was created because the Turkish Sultan needed an army of obedient foot-soldiers to consolidate the conquests of his nomadic horsemen.

From then, and for over 400 years, the Ottoman Turkish army had the Janissaries as its core. Created in about 1360, during the reign of the Sultan Murad I, they existed until their final destruction in 1826. At their peak, in the sixteenth century they were one of the finest and most feared bodies of fighting men. But their history through the last two centuries of their existence was one of decline and increasing disloyalty towards the Sultans. Their last rebellion culminated with a bloodbath in the center of Constantinople, ending in the annihilation of the corps. It had become more dangerous to the Ottoman Empire than the Sultan's enemies.

'Slave family' of the Sultan

The Janissaries were part of the 'slave-family' of the Sultan. Like the household cavalry and most of the high officers of the government, none of them were native Turks, but were taken as children from the provinces of the empire There were four methods of obtaining recruits—capture, purchase, gift and tribute. About half were obtained by the latter method, through a regular system of levying

Groups of officials were sent out every four years to the tribute regions—the Balkans, Hungary, the western coast of Asia Minor, and the southern and eastern shores of the Black Sea. Their instructions were to bring in a certain number of boys between the ages of 12 and 20. During the sixteenth century the total levy averaged about 3,000 boys. But there was no fixed levy on each town or village, so the recruiting officers would frequently obtain more children than were needed. The surplus ones would be sold before reaching Constantinople.

Only the European Christian children were destined to become Janissaries; these were drafted into a training organization, usually numbering about 20,000, called *Ajem-Oghlans*, or 'foreign youth'. They passed through seven years of intensive training before they became fully-fledged Janissaries. Those that knew no Turkish were scattered throughout Asia Minor in the service of Muslim landowners, who provided food and clothing in return for agricultural labor.

Periodically, recruits were examined by officers, and those who had acquired a reasonable knowledge of the Turkish speech, laws, faith and customs were removed to Constantinople. Upon reaching the capital, a recruit might find himself assigned to a period of training with the fleet at Gallipoli, or work among the *Bostanjis* (gardeners) and the kitchen servants in the Sultan's palaces. Groups of recruits were also employed in the shipyards, or hired out to private citizens. At this stage they received a small amount of pay, and some were taught to read and write.

At the third stage, recruits were individually assigned to *Odalar* (messes) of the Janissaries, which became responsible for their training until their proficiency, or vacancies in the ranks, enabled them to be enrolled as full Janissaries. The normal age for enrolment was about 25. After this he had to run as fast as he could past his *Oda Baschi* (lieutenant and Master of the Chamber) who gave him a blow under the ear to signify the recruit's subjection to him.

The cumulative result of all this indoctrination was to provide the Sultan with an utterly loyal military force, devoted only to him and without the competing loyalties of ordinary Turks. Plucking Christian children from their homes at an impressionable age made absolutely certain of this.

At first enrolment a Janissary was paid from one to seven-and-a-half *aspers* a day, which might be raised as high as 12 in reward for good service. The chance of promotion was a further encouragement, as all officers except the *Aga* (Commander) were drawn from the ranks. Another reward for merit was promotion into the Sultan's household cavalry, the Spahis of the Porte.

Clothing for the Janissaries was provided by the state. Each year, in the month of Ramadan, every man was given enough cloth for a new coat. In order that no one should complain at being given an inferior piece of cloth, the whole issue was laid out in darkness, so that each man chose his piece without being able to ascertain its quality.

De Busbecq, Imperial Ambassador at Constantinople from 1554 to 1562, wrote admiringly of the Janissaries: 'The Turks take the utmost care to keep their soldiers in good health and protected from the inclemency of the weather . . . hence one sees the Turk better clothed than armed. He is particularly afraid of the cold . . . guards himself (even in summer) by wearing three garments, of which the innermost is woven of coarse thread and provides much warmth.' The Dutchman Rycaut, writing in the seventeenth century, says that the Janissaries 'in all points are better provided than

Guardians of the Sultan—the tall-hatted Janissaries escort Suleiman the Magnificent as his army masses in Hungary for another invasion of Christian Europe Grouped around the Sultan in the center are the elite of an elite—the Solaks. *These picked Janissary archers formed a personal body-guard. Suleiman led similar expeditions 14 times in his reign.*

◁ *A* Peik *Sixty of these axemen were the Turkish equivalent of the ceremonial English Yeoman of the Guard and were the Janissaries closest to the Sultan This* Peik *has a beaten gold cap topped by a heron plume, and carries a dagger.*
▽ *The* Aga *of the Janissaries stands impressively in his fur-trimmed robes worn over the standard caftan. He holds his rod of office and wears blue boots to denote his rank. In camp the* ojak*'s (corp's) white banner, gold embroidered with verses from the Koran, was planted beside his tent.*

British Museum

the tattered infantry which are to be seen in most parts of Christendom.'

The Janissaries' garments were distinguished by the long caftan, or spahi, and the cap with the hanging sleeve at the back. An English traveller, Anthony Jenkinson, quaintly describes the Janissaries who he saw entering Aleppo in 1553: 'After, came 16,000 Janizaries, called the slaves of the Grand Signior, all afoote, every one having his harquebushe . . al clothed in violet silke, and apparelled upon their heads with a strange form, called "Cuocullucia", fashioned in this sort: the entering in of the forehead is like a skull made of white velvet, and hath a train hanging down behinde, in manner of a French hoode, of the same colour, and upon the forepart of the said skull, just in the middes of his forehead, there is standing both upright like a trunk of a foote long of silver, garnished most richly with Goldsmiths work, and pretious stones, and in the toppe of the saide trunke, a great bush of feathers . . . .'

De Busbecq confirms this description: '. . . there followed a long column of Janissaries, scarcely any of whom carried any other arms except their muskets. Almost all wore uniforms of the same shape and colour . . . the only ornaments in which they indulge are plumes and crests and the like, and here they let their fancy run riot, particularly the veterans who brought up the rear. The plumes which they insert in their frontlets give the appearance of a moving forest.'

At the start of the Sultan Suleiman the Magnificent's reign (1520-66), the empire boasted some 12,000 Janissaries. Suleiman raised this number to about 20,000. The whole corps was commanded by the *Janizar Agasi* or *Aga* (Commander) of Janissaries, who was not a member of the force himself, but was chosen from the Royal Chamber of the Seraglio. Upon his death, all his wealth and possessions went into the treasury of the Janissaries. Assisted by his deputy, the *Kiaya*, a chief *Yaziji* (scribe) and a bureau of clerks, the *Aga* organized enrolment, pay, promotions, supplies and clothing. He was well paid, and outranked all other generals.

The highest rung that a Janissary could reach on the ladder of promotion was the rank of *Segban-Bashi* (overseer of soldiers' baggage) which was one grade lower than the Aga himself. In descending order, the other senior officers were: the *Turnagi-Bashi* (guardian of the Sultan's cranes); the *Samsongi-Bashi* (keeper of the Sultan's mastiffs);

Zagargi-Bashi (master of the spaniels); *Solack-Bashi* (captain of archers); *Subashi* and *Assahasshi* (chiefs of sergeants and bailiffs); *Peikbashi* (commander of the axemen); and *Mezuraga* (head bailiff of the Janissaries).

The Solaks, numbering 150 or 400, according to different sources, were picked archers from the Janissaries, who formed the Sultan's bodyguard. The Peiks were a similar force of axemen, 60 in number, wearing caps of beaten gold. They marched with the Sultan and the Solaks on public occasions. These strange unmilitary names demonstrate that the Janissaries were part of an elaborate Oriental royal court, often travelling or campaigning, as well as being a fighting force

The Janissaries were grouped in messes of 10 men. Ten messes were supposed to form a chamber, or company, called an *Orta*, *Oda* or sometimes a *Bairak* (standard) though the size of these seems to have varied between 100 and 200 men. In the time of Suleiman there were some 165 ortas, 77 of which garrisoned Constantinople. Each orta had a flag, half yellow and half red, carried by the *Bairacktar* or ensign. Other officers of the orta were: *Tschorbagi* (captain); *Oda Baschi* (lieutenant and Master of the Chamber); *Wekilharg* (paymaster); *Ashgi* (cook); *Karakullukgi* (under-cook); *Saka* (water carrier).

The last three ranks are an indication of the importance of food to the Janissaries. So important indeed that their emblem was a wooden spoon! The most treasured possession of each orta was a huge copper *kazan* (cauldron)—the symbol of the unit's solidarity and fraternity, in which their rice and soup was boiled. A unit which lost its cauldron to the enemy was disgraced, while the overturning of cauldrons in Constantinople was a sign of disaffection which, in later years, heralded the all too frequent insurrections against the Sultan.

The Janissaries seem to have existed primarily on a diet of bread and pilau, or boiled rice, eating little meat, and drinking only water, according to the law of the Prophet, which forbad wine. De Busbecq watched a Janissary 'devouring off an earthenware trencher a mixture of turnip, onion, garlic, parsnip, cucumber, seasoned with salt and vinegar.'

The Janissary head cook served another important function: he was responsible for inflicting punishments. It was his duty to arrest, put in irons, and, if necessary, garotte prisoners. There were strict laws which the Janissaries had to obey, and discipline was maintained by a mixture of

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△ *One of the* Ajem-Oghlans *intake of 1618. This Christian youth in palace school uniform wears a conical hat and has a prayer mat under his arm. Only the contemporary training of Jesuit priests compared in length and intensity with the monastic-barrack life of a Janissary apprentice.*

British Museum

▷ *An* Ashgi *of the Imperial Kitchens. This Janissary cook holds a long vegetable ladle for dishing out rations from the copper cauldron of the* orta, *three of whose seven ranks had a food or drink task. This and the scullion training of Janissary recruits meant well-fed and healthy soldiers*

reward for merit and the threat of punishment for misdeeds. Janissaries were not to marry, let their beards grow, engage in trade or indulge in luxury, extravagance and practices unseemly for a soldier.

Though many of these rules were relaxed from the late sixteenth century onwards, western observers were always quick to remark on the discipline of Janissaries on the march and in camp. 'Peace and silence' says De Busbecq 'reign in a Turkish camp.' 'There is no crime and no offence which the Turks leave unpunished' he adds '. . . lighter offences bring flogging, more serious crimes dismissal from the army or removal to another unit, which they regard as worse than death itself.'

Punishment often took the form of being beaten on the buttocks and the soles of the feet with cudgels. The Janissaries are said to have displayed remarkable endurance, often taking more than 100 strokes, and still managing to hobble to the official who had ordered the punishment, kiss his hand, as required, thank him, and then pay the man who carried out the punishment a fixed sum for each stripe

The Janissaries themselves meted out punishment to offenders throughout the empire. Every town and village of any size had its quota of Janissaries to maintain law and order while in Constantinople itself the Aga would ride the streets with about 40 Janissary bailiffs, executing summary justice on malefactors. In peace-time, they were not permitted to go armed, except for the frontier garrisons, and they would patrol the streets with only swords and cudgels.

Strange relationship

The corps had a strange relationship with the Bektashi Dervish sect which taught that all formal religion—Christianity and Islam—was only a poor second to their personal mystic contact with God. Haji Bektash, their founder, had blessed the corps at its creation by laying the long white sleeve of his gown over the head of the first *Aga* of Janissaries. From this incident is said to derive the headgear of the Janissaries, the long white sleeve of Haji Bektash. The dervishes and the Janissaries maintained a close connection, and new chiefs of the dervishes sought recognition from the Janissaries before visiting the Grand Vizier (the Sultan's chief minister). This alliance helped preserve the Janissaries when they were threatened with dissolution for the sect was turbulent and powerful, though accused of heresy by the majority of Muslims.

Thus according to Rycaut: 'Some Friars of this order of Bectash do in all public shows and solemnities march near the person of the Janizar Aga, crying continually "Hu ! Hu !" with daggers drawn. They are most licentious sort of people much given to Sodomy, for which the ignorant and loose sort of Janissaries are willingly their disciples; and are now grown into that vast multitude, as is almost impossible to extirpate them or their vices.'

In time of war, each Janissary had to provide his own arms, being inspired by rivalry to obtain the best possible. By 1500 the composite Turkish bow was being replaced by the arquebus (a heavy hand-gun fired by a matchlock), making the Janissaries the first body of troops in the world to use firearms on a large scale. Other arms seem to have been limited to daggers and swords, with a noticeable lack of long weapons such as spears or pikes. At the siege of Rhodes (1522) the Knights of St. John found that the Janissaries with their scimitars could be beaten back by the use of half-pikes.

'The Janissaries are lightly armed' De Busbecq says 'and do not usually fight at close quarters, but use muskets.' The Turks in the sixteenth century appear to have grasped the idea of the potential of firearms very rapidly, especially with regard to defensive fighting. Many of their victories hinged upon the bulwark of Janissary musketry, which, combined with artillery fire, usually shattered the most determined enemy assaults.

In March 1514, Sultan Selim the Grim undertook a campaign against Persia. He collected an army said to number 140,000 men and 300 pieces of artillery, supported by a supply train of thousands of camels. The Persian army led by Shah Ismail, gave battle at Tchaldiran on 23 August. This was a force consisting of a reputed 80,000 cavalry, mainly horse archers and mailed lancers on light horses; they were well equipped, well trained in rapid movement and famous for their archery.

The Ottoman army was drawn up in its usual close order of battle; the first line consisted of the irregular light cavalry and infantry, while the second comprised the feudal cavalry of Asia on the right and those of Europe on the left. Between these two forces were the Sultan Selim and the Janissaries with the Spahis of the Porte. The Janissaries were a mixture of bowmen and arquebusiers, with their flanks guarded after the manner of the fifteenth-century Hussite rebels of Bohemia, by a barrier of carts, chains and camels. In front of the Janissaries, the artillery was roped in separate massed batteries, wheel to wheel. The Turks had adopted European tactics, learned in their western wars, for use against their eastern foes

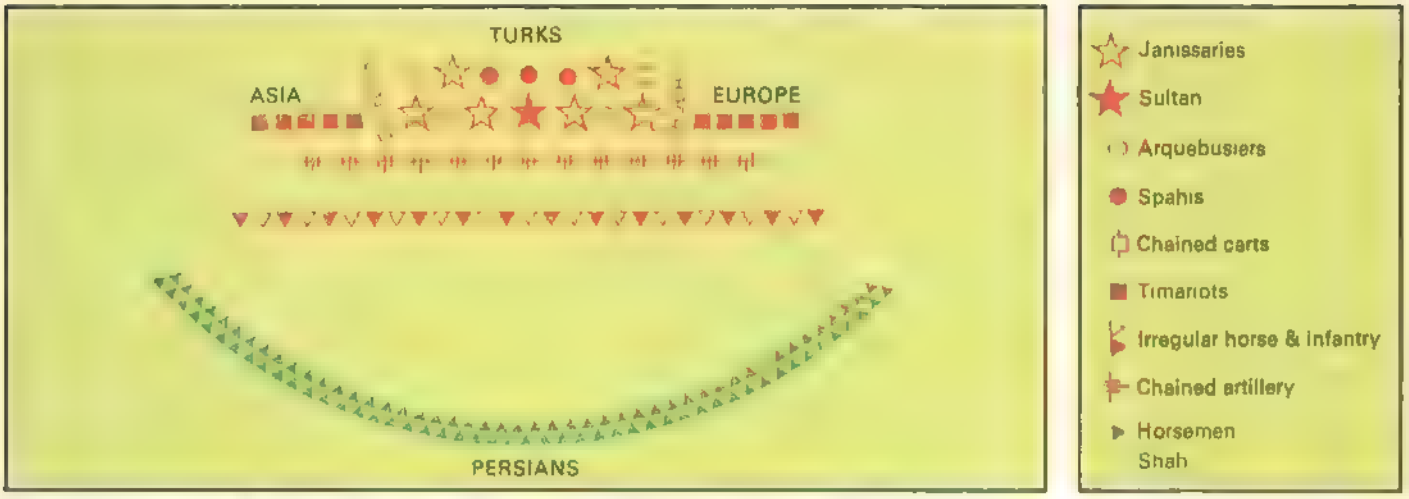
The Persians attacked in the traditional oriental manner: the center was held back and the two wings attacked in a double outflanking movement. The right wing, led by Shah Ismail, cut its way through the front line of irregulars and fell upon the European cavalry, who were broken, and driven back upon the flank of the Janissaries. The Shah's charge was halted when he ran into the Spahis and the Janissaries.

The Persian left failed to crack the cavalry of Asia, and veered to the right in search of easier prey, slaughtering the irregulars in the center. In endeavouring to press their success here, however, they came up against a solid wall of Janissary arquebusiers and artillery, and though they got amongst the guns the hail of shot drove them off, broken and shattered, to fall back upon the right wing of their army. It was at this point that the Shah was wounded in the arm either by a cannon ball or an arquebus ball, and when he was carried from the field his army followed him in flight.

Both sides maintained that the Turks owed their costly victory to the firepower of the Janissaries and artillery. Yet typically the campaign began and finished with a Janissary mutiny; superb on the day of battle they could be impossible when not fighting.

Two years later, Selim marched against the Mamelukes of Syria, with an army of some 15,000 feudal horse, 3,000 Spahis of the Porte, and 8,000 Janissaries. These were supported by 50 guns and thousands of irregulars. On 24 August 1516 this army confronted 13,000 elite Mameluke horsemen, supported by masses of Arab and Asiatic cavalry

▷ *The Janissaries advance to complete the victory of Mohacs over the Hungarians on 29 August 1526. On the cannon just fired by a renegade European master-gunner is a Janissary red and yellow* orta *flag. A goodly pile of heads has been laid at the feet of Sultan Suleiman's white horse.*



The Ottoman order of battle at Tchaldiran (23 August 1514) began a run of Turkish victories by combining the defensive firepower of artillery, Janissary archers and arquebusiers with the charges of Spahi and Timariot cavalry on the flanks

levies at Merj-Dabik, 10 miles north of Aleppo. The Mamelukes were individually far superior to the Turkish horse, and were better armed, consisting predominantly of lancers wearing chain-mail shirts, and some bowmen. They had no artillery, considering this a weapon of cowards, and a hindrance to an army of cavalry.

Selim's army adopted its usual battle order, as at Tchaldiran. The Mamelukes were divided into four corps; the two flanks were to attack while the center held back and behind the whole army was a reserve force. The attack of the left wing was successful, and the Turkish masses were pushed back upon the Janissaries. Because of treachery, the right wing did not press home its charge to full advantage, and the issue hung in doubt. Seeing this, the center force rode in to tip the scales against the Turks, only to run headlong into the artillery and Janissaries. Torn apart by the fire of the latter, the Mameluke center fled the field sweeping away the entire reserve corps in the rout, and leaving the Mameluke sultan dead upon the field.

Following up this victory, Selim took his army on a long desert march to Egypt. In an attempt to learn from the lesson of Merj-Dabik the new Mameluke sultan confronted the Turks with a line of fortifications five or six miles long, containing artillery brought from the Egyptian sea coast fortifications. The Ottoman army simply outflanked this position and then drew up in its normal formation ready for battle on 22 January 1517 at the village of Ridanieh.

The Mamelukes, unable to turn their guns, were forced into the attack by an effective Turkish cannonade. The Mameluke left wing was defeated and driven off. But the right broke the European cavalry and then fell upon a small reserve force of cavalry and 500 Janissaries in the Turkish rear. While they were thus distracted, the Mameluke center found itself confronted by the main body of Janissaries, who held their ground, though their formation was broken into, until both wings of the Ottoman army could draw in on the attackers' flanks, forcing them to retreat

From these battles, it will be seen how essential the Janissaries were to Ottoman success. They provided a strong defensive bastion in the field which was the focal point of the loose Turkish masses, and against which every cavalry charge would fail. Fighting against oriental armies of cavalry without guns, these tactics seemed bound to work, as the enemy would be forced into the attack every time, only to break himself against the artillery and the Janissaries who were drawn up for all-round defense. But what of warfare against western armies?

On 29 August 1526 Sultan Suleiman the Magnificent faced the Hungarian army at Mohacs on the Danube. King Lewis II commanded 13,000 foot, 5,500 of whom were

Janissaries march into Tiflis, capital of Georgia, in August 1578 during a long war with Persia Seldom did they now get the chance to fight in the field, while frontier warfare and garrison duties led to a dilution of quality and cohesion

British Museum

Sonia Halliday

A squad of Janissaries in 1548 looking drab in comparison with their gaudy successors on the previous page. Their arquebuses are not pattern inlaid and they wear daggers in place of scimitars. They carry powder-horns and in action would have a length of match coiled around the left arm.

Sonia Halliday

Another fortress falls to the Janissaries—Van in 1548 by the Armenian lake. The Sultan always returned to winter in Constantinople. This meant repeated Janissary assaults to shorten sieges. Suleiman died raging at three such futile attempts to storm the Hungarian fortress of Szigeth in 1566.

professional soldiers from Germany and Poland, and 12,000 horse, predominantly Hungarian light cavalry but including 4,000 fully armored nobles, the brave but undisciplined chivalry of Hungary. This army had with it many heavy wagons, and it was proposed that a Hussite defensive battle should be fought, with the infantry protected by the wagons. However, the plan was rejected because of the danger that such a position could be outflanked by the 70,000 Turks.

Suleiman, warned of the power of the Hungarian cavalry charge, adopted a new and deeper formation : the irregulars formed the first line ; behind them the feudal horse of Europe formed the second, and the cavalry of Asia the third ; the last line consisted of the artillery and the 12,000 Janissaries, flanked on either side by the Spahis of the Porte. A separate body of 4,000 irregular cavalry was posted about a mile away, to come over the hills and take the Hungarians in the flank at the height of the battle.

The first Hungarian charge swept away the irregulars and drove back the first line of cavalry, inflicting heavy losses. Seeing the Turkish cavalry in retreat, the Hungarians commenced somewhat premature general advance, leaving their artillery behind. The Turkish flanking force hit the Hungarian right, and pushed it back, but could not prevent the defeat of the Turkish cavalry. In the final stages of the battle, the chivalry of Hungary dashed iteslf to pieces against point-blank cannon fire. 'At the order of the Sultan', says Kemal Pasha, 'the arquebusiers of the Janissaries, directing their blows against the cruel panthers who opposed us, causing hundreds, or rather thousands of them, in the space of the moment, to descend into the depths of hell.' In the rout which followed, the Hungarian army was annihilated and the kingdom annexed.

So far we have seen the Janissaries fighting defensively on the open battlefield, but they also excelled at siege-work. At Constantinople (1453) and Rhodes (1522) their assaults made the decisive lodgements that led to the fall of these Christian strongholds. During the Great Siege of Malta in 1565, the Turkish force included some 4,500 picked Janissary arquebusiers. When Fort St. Elmo was invested they at once showed their ability as snipers, positioning themselves often to within 500ft of the walls, building cover from brushwood, planks and earth. They far outclassed the Christian arquebusiers in accuracy, and soon, no man dared show his head above the wall for fear of being instantly

picked off. Later in the siege, the Turks built high towers which were pushed close to the walls of the Senglea fortifications; from the tops of these, Janissary snipers could fire down on the defenders.

But it was for the assault that the Janissaries were most valued. Once the irregulars had filled the ditches and the breaches with their corpses, the Janissaries would be hurled against the defenses. They advanced with a martial din that was barbaric and unearthly to the Christians, wailing and screaming as they charged. An attack was often preceded by the clashing of cymbals and the playing of oboes, triangles, jingling crescents, trumpets and kettledrums. In one assault against St. Elmo the Janissaries hurled fire grenades ahead of them as they advanced: it was a type of incendiary that clung to the armor or the body when it burst. The defenders had to position water barrels below the walls for burning soldiers to leap into. But the Janissaries suffered more easily from this type of weapon, for their long loose garments were easily set alight by the fire hoops which the Knights of St. John threw down upon them.

'The body of a Janissary is only a stepping stone for his brethren into the breach itself' they proudly boasted, but it was their constant employment in the fore-front of every siege that began to reduce their effectiveness in the field. Every veteran Janissary lost under the walls of Rhodes, Vienna and Malta, meant a further dilution of quality. Numbers were only kept up by cutting down on the time the *Ajem-Oghlans* spent in training: in the late seventeenth century this had been reduced from seven years down to 18 months. Rycaut speaks of men 'created Janizaries, who neither know how to manage a musket, nor are otherwise disciplined to any exercise of arms.'

An 'ordinary' general not enough

By the end of Suleiman's reign, entry to the corps became a hereditary right bestowed upon the sons of former Janissaries, and at the time of the Persian War of 1594 any Turk or Muslim could enlist. Rycaut refers disparagingly to the taking in of Asian 'vagabonds' who will only 'run from their colours'. At the Battle of Zenta in 1697 a large body of Janissaries did massacre their officers before fleeing in disorder. Suleiman was the first Sultan to send the Janissaries on campaigns without accompanying them, and under his successors this exception became the rule. This was a further demoralization for the Janissaries, for they were supposed to owe allegiance only to the Sultan, and to guard his person in battles. To be led to war by an ordinary general served only to increase their disaffection and lower their morale.

Ottoman expansion westward increasingly pitted the Janissaries against the new pikemen and arquebusiers of Europe, well-disciplined, and drilled in efficient maneuver. Organized though they were in comparison with the wild unruly fighting men of Hungary, the Balkans, and the Middle East, the Janissaries could not compete with the trained infantry of the Hapsburgs. 'The Turkish foot-soldiers', wrote a contemporary observer in 'De Turcics Militia', 'however numerous, can never be equalled to the combination of German *landsknechts* and Spanish and Italian arquebusiers. If the Janissaries, the core and strength of their army, are beat, the Christians may get without difficulty their guns, their camp, and all its plunder. For though vast quantities of their horse may escape, it does not much matter, since they will not stand if the Janissaries are once routed.'

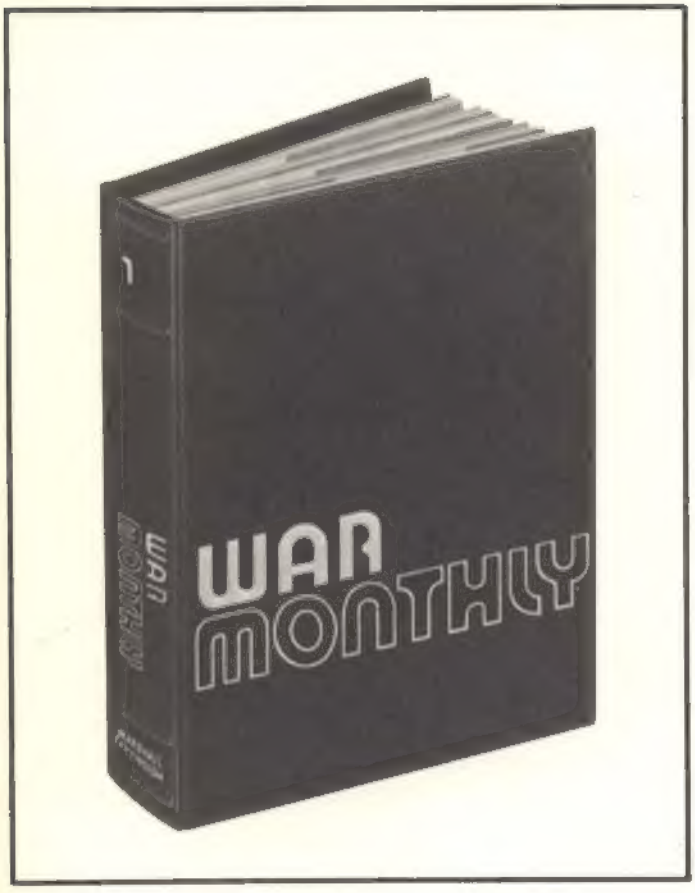
Wallace Collection

The decadent palace guard, a young French artist's portrait of a Janissary very shortly before the extermination of the corps in 1826. They had last fought well in Egypt in 1799, against Napoleon. One legacy, from their military music, is the German word Janitschar *meaning percussion player.*

As the years went by, European infantry progressed while the Janissaries clung to tradition in the inevitable Muslim manner. At the great sea battle of Lepanto of 1571 the 6,000 Janissary arquebusiers found themselves at a great disadvantage in hand-to-hand fighting with the Spanish soldiers, who were protected by morion helmets and breastplates. But they still distained to adopt any form of armor. As the seventeenth century saw the advent of regimented regular armies in Europe, Rycaut could still write of the Janissaries: 'They fight confusedly in the field, and with no more order than the Spahis'.

Any attempt at disbanding the Janissaries in order to replace them with an entirely new body of regular infantry was violently opposed, and usually provoked a Janissary riot through the streets of Constantinople. When this happened, in 1826, war was formally declared upon the Janissaries, and they were surrounded by troops loyal to the Sultan. Upon their refusal to surrender, artillery opened up on them until they were destroyed: all those taken prisoner as they tried to flee were hanged, and before long the Janissaries had ceased to exist.

Chris Beaumont



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